

$$\sqrt{12} = \sqrt{2^2 \cdot 3} = 2\sqrt{3}$$

$$\sqrt{18} = \sqrt{3^2 \cdot 2} = 3\sqrt{2}$$

$$\sqrt{50} = \sqrt{5^2 \cdot 2} = 5\sqrt{2}$$

$$\sqrt{75} = \sqrt{5^2 \cdot 3} = 5\sqrt{3}$$

$$\sqrt{8} = \sqrt{2^2 \cdot 2} = 2\sqrt{2}$$

$$\sqrt{27} = \sqrt{9 \cdot 3} = \sqrt{3^2 \cdot 3} = 3\sqrt{3}$$

$$\sqrt{64} = \sqrt{8^2} = 8$$

$$\sqrt{125} = \sqrt{5^2 \cdot 5} = 5\sqrt{5}$$

$$\sqrt{250} = \sqrt{25 \cdot 10} = 5\sqrt{10}$$

$$\sqrt{20} = \sqrt{2^2 \cdot 5} = 2\sqrt{5}$$

$$\sqrt{60} = \sqrt{2^2 \cdot 15} = 2\sqrt{15}$$

$$\sqrt{80} = \sqrt{16 \cdot 5} = 4\sqrt{5}$$

$$\sqrt{90} = \sqrt{3^2 \cdot 10} = 3\sqrt{10}$$

$$\sqrt{121} = \sqrt{11^2} = 11$$

$$\sqrt{242} = \sqrt{2 \cdot 121} = 11\sqrt{2}$$

$$\sqrt{225} = \sqrt{15^2} = 15$$

$$3\sqrt{8} = 3 \cdot \sqrt{8} = 3 \cdot 2\sqrt{2} = 6\sqrt{2}$$

OU

$$\sqrt{12} = \sqrt{4 \times 3} = \sqrt{4} \cdot \sqrt{3} = 2\sqrt{3}$$

$$\sqrt{18} = \sqrt{9 \cdot 2} = \sqrt{3^2} \cdot \sqrt{2} = 3\sqrt{2}$$

$$\sqrt{50} = \sqrt{25 \cdot 2} = \sqrt{5^2} \cdot \sqrt{2} = 5\sqrt{2}$$

$$\sqrt{75} = \sqrt{25 \cdot 3} = \sqrt{5^2} \cdot \sqrt{3} = 5\sqrt{3}$$

$$\sqrt{8} = \sqrt{4 \cdot 2} = \sqrt{2^2} \cdot \sqrt{2} = 2\sqrt{2}$$

$$\sqrt{27} = \sqrt{9 \cdot 3} = \sqrt{3^2} \cdot \sqrt{3} = 3\sqrt{3}$$

$$\sqrt{64} = \sqrt{8^2} = 8$$

$$\sqrt{125} = \sqrt{25 \cdot 5} = \sqrt{5^2} \cdot \sqrt{5} = 5\sqrt{5}$$

$$\sqrt{3^3} = \sqrt{3^2 \cdot 3}$$

$$\sqrt{250} = \sqrt{25 \cdot 10} = \sqrt{5^2} \cdot \sqrt{2 \cdot 5} = 5\sqrt{10}$$

$$\sqrt{20} = \sqrt{4 \cdot 5} = 2\sqrt{5}$$

$$\sqrt{60} = \sqrt{4 \cdot 15} = \sqrt{2^2} \cdot \sqrt{15} = 2\sqrt{15}$$

$$\sqrt{80} = \sqrt{16 \cdot 5} = 4\sqrt{5}$$

$$\sqrt{90} = \sqrt{9 \cdot 10} = \sqrt{3^2} \cdot \sqrt{10} = 3\sqrt{10}$$

$$\sqrt{121} = \sqrt{11^2} = 11$$

$$\sqrt{242} = \sqrt{2 \cdot 121} = \sqrt{2} \cdot \sqrt{11^2} = 11\sqrt{2}$$

$$\sqrt{225} = \sqrt{15^2} = 15$$

OU

$$\sqrt{12} = \sqrt{4 \cdot 3} = \sqrt{2^2 \cdot 3} = 2\sqrt{3}$$

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$$\sqrt{50} = \sqrt{25 \cdot 2} = \sqrt{5^2 \cdot 2} = 5\sqrt{2}$$

$$\sqrt{75} = \sqrt{25 \cdot 3} = \sqrt{5^2 \cdot 3} = 5\sqrt{3}$$

$$\sqrt{8} = \sqrt{4 \cdot 2} = \sqrt{2^2 \cdot 2} = 2\sqrt{2}$$

$$\sqrt{27} = \sqrt{3^3} = \sqrt{3^2 \cdot 3} = 3\sqrt{3}$$

$$\sqrt{64} = \sqrt{8^2} = 8$$

$$\sqrt{125} = \sqrt{5^3} = \sqrt{5^2 \cdot 5} = 5\sqrt{5}$$

$$\sqrt{250} = \sqrt{25 \cdot 10} = \sqrt{5^2 \cdot 10} = 5\sqrt{10}$$

$$\sqrt{20} = \sqrt{4 \cdot 5} = \sqrt{2^2 \cdot 5} = 2\sqrt{5}$$

$$\sqrt{60} = \sqrt{2^2 \cdot 3 \cdot 5} = 2\sqrt{15}$$

$$\sqrt{80} = \sqrt{16 \cdot 5} = \sqrt{4^2 \cdot 5} = 4\sqrt{5}$$

$$\sqrt{90} = \sqrt{9 \cdot 10} = \sqrt{3^2 \cdot 10} = 3\sqrt{10}$$

$$\sqrt{121} = \sqrt{11^2} = 11$$

$$\sqrt{242} = \sqrt{121 \cdot 2} = \sqrt{11^2 \cdot 2} = 11\sqrt{2}$$

$$\sqrt{225} = \sqrt{15^2} = 15$$

$$2\sqrt{20} = 2 \cdot 2\sqrt{5} = 4\sqrt{5}$$



$$3\sqrt{8} = 3\sqrt{4 \cdot 2} = 3\sqrt{2^2 \cdot 2} = 3 \cdot 2\sqrt{2} = 6\sqrt{2}$$

$$2\sqrt{12} = 2\sqrt{4 \cdot 3} = 2 \cdot 2\sqrt{3} = 4\sqrt{3}$$

$$4\sqrt{63} = 4\sqrt{9 \cdot 7} = 4\sqrt{3^2 \cdot 7} = 4 \cdot 3\sqrt{7} = 12\sqrt{7}$$

$$5\sqrt{18} = 5\sqrt{9 \cdot 2} = 5\sqrt{3^2 \cdot 2} = 5 \cdot 3\sqrt{2} = 15\sqrt{2}$$

$$6\sqrt{50} = 6\sqrt{25 \cdot 2} = 6\sqrt{5^2 \cdot 2} = 6 \cdot 5\sqrt{2} = 30\sqrt{2}$$

$$3\sqrt{28} = 3\sqrt{4 \cdot 7} = 3\sqrt{2^2 \cdot 7} = 3 \cdot 2\sqrt{7} = 6\sqrt{7}$$

$$5\sqrt{32} = 5\sqrt{16 \cdot 2} = 5 \cdot 4\sqrt{2} = 20\sqrt{2}$$

$$4\sqrt{27} = 4\sqrt{9 \cdot 3} = 4 \cdot 3\sqrt{3} = 12\sqrt{3}$$

$$7\sqrt{45} = 7\sqrt{9 \cdot 5} = 7\sqrt{3^2 \cdot 5} = 7 \cdot 3\sqrt{5} = 21\sqrt{5}$$

$$3\sqrt{500} = 3\sqrt{100 \cdot 5} = 3 \cdot 10\sqrt{5} = 30\sqrt{5}$$

$$8\sqrt{72} = 8\sqrt{36 \cdot 2} = 8\sqrt{6^2 \cdot 2} = 8 \cdot 6\sqrt{2} = 48\sqrt{2}$$

$$3\sqrt{200} = 3\sqrt{100 \cdot 2} = 3 \cdot 10\sqrt{2} = 30\sqrt{2}$$

$$9\sqrt{54} = 9\sqrt{6 \cdot 9} = 9\sqrt{6 \cdot 3^2} = 9 \cdot 3\sqrt{6} = 27\sqrt{6}$$

$$7\sqrt{75} = 7\sqrt{25 \cdot 3} = 7\sqrt{5^2 \cdot 3} = 7 \cdot 5\sqrt{3} = 35\sqrt{3}$$

$$3\sqrt{128} =$$

$$\sqrt{2500} =$$

$$\sqrt{8} = \sqrt{2^2 \cdot 2} = \sqrt{4 \cdot 2} = 2\sqrt{2}$$

$$(2^6)^{\frac{1}{2}} = 2^{\frac{6}{2}} = 2^3$$

Al 16

$$3\sqrt{8} = 3 \cdot 2\sqrt{2} = 6\sqrt{2}$$

$$7\sqrt{45} = 7 \cdot \sqrt{9 \cdot 5} = 7 \cdot 3\sqrt{5} = 21\sqrt{5}$$

$$2\sqrt{12} = 2\sqrt{4 \cdot 3} = 2\sqrt{2^2 \cdot 3} = 2 \cdot 2\sqrt{3} = 4\sqrt{3}$$

$$3\sqrt{500} = 3\sqrt{100 \cdot 5} = 3 \cdot 10\sqrt{5} = 30\sqrt{5}$$

$$4\sqrt{63} = 4\sqrt{9 \cdot 7} = 4\sqrt{3^2 \cdot 7} = 4 \cdot 3\sqrt{7} = 12\sqrt{7}$$

$$8\sqrt{72} = 8\sqrt{6^2 \cdot 2} = 8 \cdot 6\sqrt{2} = 48\sqrt{2}$$

$$5\sqrt{18} = 5\sqrt{3^2 \cdot 2} = 5 \cdot 3\sqrt{2} = 15\sqrt{2}$$

$$3\sqrt{200} = 3\sqrt{100 \cdot 2} = 3 \cdot 10\sqrt{2} = 30\sqrt{2}$$

$$6\sqrt{50} = 6\sqrt{5^2 \cdot 2} = 6 \cdot 5\sqrt{2} = 30\sqrt{2}$$

$$9\sqrt{54} = 9\sqrt{3^2 \cdot 6} = 9 \cdot 3\sqrt{6} = 27\sqrt{6}$$

$$3\sqrt{28} = 3\sqrt{2^2 \cdot 7} = 3 \cdot 2\sqrt{7} = 6\sqrt{7}$$

$$7\sqrt{75} = 7\sqrt{5^2 \cdot 3} = 7 \cdot 5\sqrt{3} = 35\sqrt{3}$$

$$5\sqrt{32} = 5\sqrt{2^5} = 5\sqrt{2^4 \cdot 2} = 5 \cdot 2^2\sqrt{2} = 20\sqrt{2}$$

$$3\sqrt{128} = 3\sqrt{2^6 \cdot 2} = 3 \cdot 2^3\sqrt{2} = 24\sqrt{2}$$

$$4\sqrt{27} = 4\sqrt{3^3} = 4\sqrt{3^2 \cdot 3}$$

$$\sqrt{2500} = \sqrt{25 \cdot 100} = 5 \cdot 10 = 50$$

$$= 4 \cdot 3\sqrt{3} = 12\sqrt{3}$$

$$= \sqrt{50^2} = 50$$

$$\sqrt{8} = \sqrt{2^2 \cdot 2} = \sqrt{4 \cdot 2} = 2\sqrt{2}$$

$$(2^6)^{\frac{1}{2}} = 2^{\frac{6}{2}} = 2^3$$

Al 16

$$3\sqrt{8} = 3 \times 2\sqrt{2} = 6\sqrt{2}$$

$$7\sqrt{45} = 7 \times 3\sqrt{5} = 21\sqrt{5}$$

$$2\sqrt{12} = 2 \times 2\sqrt{3} = 4\sqrt{3}$$

$$3\sqrt{500} = 3 \times 10\sqrt{5} = 30\sqrt{5}$$

$$4\sqrt{63} = 4\sqrt{9 \cdot 7} = 4\sqrt{3^2 \cdot 7} = 4 \cdot 3\sqrt{7} = 12\sqrt{7}$$

$$8\sqrt{72} = 8\sqrt{36 \cdot 2} = 8 \cdot 6\sqrt{2} = 48\sqrt{2}$$

$$5\sqrt{18} = 5 \times 3\sqrt{2} = 15\sqrt{2}$$

$$3\sqrt{200} = 3 \times 10\sqrt{2} = 30\sqrt{2}$$

$$6\sqrt{50} = 6 \times 5\sqrt{2} = 30\sqrt{2}$$

$$9\sqrt{54} = 9\sqrt{6 \cdot 9} = 9 \cdot 3\sqrt{6} = 27\sqrt{6}$$

$$3\sqrt{28} = 3 \times 2\sqrt{7} = 6\sqrt{7}$$

$$7\sqrt{75} = 7 \times 5\sqrt{3} = 35\sqrt{3}$$

$$5\sqrt{32} = 5\sqrt{2^5} = 5\sqrt{2^4 \cdot 2} = 5 \cdot 2^2\sqrt{2} = 20\sqrt{2}$$

$$3\sqrt{128} = 3\sqrt{2^7} = 3\sqrt{2^6 \cdot 2} = 3 \cdot 2^3\sqrt{2} = 24\sqrt{2}$$

$$4\sqrt{27} = 4 \cdot 3\sqrt{3} = 12\sqrt{3}$$

$$\sqrt{2500} = 5 \cdot 10 = 50$$

$$\sqrt{3} \cdot 7$$

Exercices

$$\sqrt{0,25} = \sqrt{0,5^2} = 0,5$$

$$\sqrt{\frac{25}{100}} = \frac{\sqrt{25}}{\sqrt{100}} = \frac{\sqrt{5^2}}{\sqrt{10^2}} = \frac{5}{10} = \frac{1}{2}$$

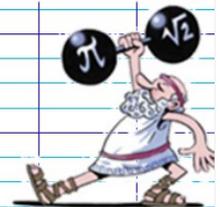
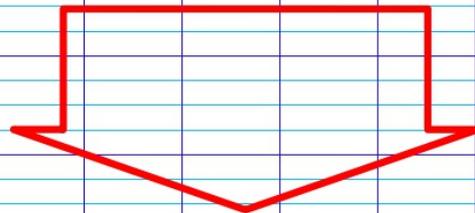
$$\sqrt{0,04} = \sqrt{0,2^2} = 0,2$$

$$\sqrt{0,75} = \sqrt{0,25 \cdot 3} = 0,5\sqrt{3}$$

✖

$$\begin{aligned}\sqrt{0,005} &= \sqrt{0,0050} = \sqrt{0,0001 \cdot 50} \\ &= 0,01 \cdot 5\sqrt{2} \\ &= 0,05\sqrt{2}\end{aligned}$$

$$\sqrt{2,5^2} = 2,5$$



$$\sqrt{0,25} = \sqrt{0,5^2} = 0,5$$

$$\sqrt{0,04} = \sqrt{0,2^2} = 0,2$$

$$\sqrt{0,75} = \sqrt{0,25 \cdot 3} = 0,5\sqrt{3}$$

$$\sqrt{6,25} = 2,5$$

$$\sqrt{0,005} = 0,05\sqrt{2}$$

$$\sqrt{0,0625} = 0,25$$

$$\sqrt{2^3} = \sqrt{2^2 \cdot 2} = 2\sqrt{2}$$

$$\sqrt{5^4} = 5^2 = 25$$

$$\sqrt{2^4 \cdot 3} = 4\sqrt{3}$$

$$\sqrt{2 \cdot 3^5} = \sqrt{2 \cdot 3^4 \cdot 3} = 3^2 \sqrt{6} = 9\sqrt{6}$$

$$\sqrt{9^7} = \sqrt{9^6 \cdot 9} = 9^3 \sqrt{9} = 243\sqrt{9}$$

$$\sqrt{8^5} = \sqrt{8^4 \cdot 8} = 8^2 \sqrt{8} = 64 \cdot 2\sqrt{2} = 128\sqrt{2}$$

$$\sqrt{3^7} = 27\sqrt{3}$$

$$\sqrt{2^6} = 2^3 = 8$$

$$\sqrt{5^3 \cdot 7} = 5\sqrt{35}$$

$$\sqrt{2^9 \cdot 5} = \sqrt{2^8 \cdot 2 \cdot 5} = 2^4 \sqrt{10} = 16\sqrt{10}$$

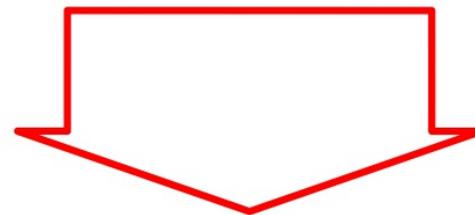
$$\sqrt{16^3} = 64$$

$$\sqrt{25^3} = \sqrt{25^2 \cdot 25} = 25 \cdot 5 = 125$$

$$\sqrt{2^4 \cdot 3^6} = 2^2 \cdot 3^3 = 108$$

$$\sqrt{3^3 \cdot 5^5} = 3 \cdot 5^2 \sqrt{5} = 75\sqrt{5}$$

$$\sqrt{100^3} = \sqrt{10^6} = 10^3 = 1000$$





$$\sqrt[2]{3^1} = 3^{\frac{1}{2}}$$

$$\sqrt[2]{3^6} = (3^6)^{\frac{1}{2}} = 3^{6 \cdot \frac{1}{2}} =$$

$$\sqrt[3]{5} = 5^{\frac{1}{3}}$$

$$\sqrt[3]{5^6} = (5^6)^{\frac{1}{3}} = 5^{\frac{6}{3}} = 5^2$$

$$\sqrt[n]{5^6} = (5^6)^{\frac{1}{n}} = 5^{\frac{6}{n}}$$



Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$\sqrt{2} \cdot \sqrt{3} =$	b) $3\sqrt{2} \cdot 5\sqrt{3} =$	c) $(\sqrt{7})^2 =$	d) $\sqrt{12} \sqrt{3} \sqrt{18}$ $= \sqrt{2 \cdot 3 \cdot 3 \cdot 3 \cdot 2}$ $= 2 \cdot 3 \cdot 3 \sqrt{2} = 18\sqrt{2}$
$\sqrt{8} \cdot \sqrt{2} =$	$3\sqrt{2} \cdot \sqrt{2} =$	$(2\sqrt{3})^2 =$	$2\sqrt{3} \cdot 7\sqrt{3} \cdot \sqrt{3}$
$\sqrt{75} \cdot \sqrt{50} =$	$\sqrt{19} \cdot \sqrt{19} =$	$(7\sqrt{2})^2 =$	$2\sqrt{10} \cdot 5\sqrt{15}$ $= 10 \sqrt{2 \cdot 5 \cdot 5 \cdot 3}$ $= 10 \cdot 5 \sqrt{2 \cdot 3} = 50\sqrt{6}$
$\sqrt{32} \cdot \sqrt{18} =$	$5\sqrt{15} \cdot \sqrt{15} =$	$(-6\sqrt{8})^2 =$	$4\sqrt{21} \cdot \sqrt{7}$
$\sqrt{12} \cdot \sqrt{3} =$	$\sqrt{42} \cdot \sqrt{7} =$	$(-3\sqrt{5})^2 =$	$2\sqrt{5} \cdot 3\sqrt{7} \cdot 5\sqrt{105}$

Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

(AM P 37 n° d colonnes 1 → 4)

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A

$$\sqrt{2} \cdot \sqrt{3} = \sqrt{2 \cdot 3} = \sqrt{6}$$

$$\sqrt{8} \cdot \sqrt{2} = \sqrt{2^2 \cdot 2 \cdot 2} = 2 \cdot 2 = 4$$

$$\sqrt{75} \cdot \sqrt{50} = \sqrt{3 \cdot 5^2 \cdot 2 \cdot 5^2} = 25\sqrt{6}$$

$$\begin{aligned} \sqrt{32} \cdot \sqrt{18} &= \sqrt{2^5 \cdot 2 \cdot 3^2} \\ &= \sqrt{2^6 \cdot 3^2} = 8 \cdot 3 = 24 \end{aligned}$$

$$\begin{aligned} \sqrt{12} \cdot \sqrt{3} &= \sqrt{2^2 \cdot 3 \cdot 3} \\ &= \sqrt{2^2 \cdot 3^2} \\ &= 2 \cdot 3 = 6 \end{aligned}$$

B

$$\begin{aligned} 3\sqrt{2} \cdot 5\sqrt{3} &= 3 \cdot 5 \sqrt{2 \cdot 3} \\ &= 15\sqrt{6} \end{aligned}$$

$$3\sqrt{2} \cdot \sqrt{2} = 3(\sqrt{2})^2 = 3 \cdot 2 = 6$$

$$\sqrt{19} \cdot \sqrt{19} = \sqrt{19^2} = 19$$

$$\begin{aligned} 5\sqrt{15} \cdot \sqrt{15} &= 5\sqrt{15^2} = 5 \cdot 15 \\ &= 75 \end{aligned}$$

$$\begin{aligned} \sqrt{42} \cdot \sqrt{7} &= \sqrt{7 \cdot 6 \cdot 7} \\ &= \sqrt{7^2 \cdot 6} = 7\sqrt{6} \end{aligned}$$

$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$

$\sqrt{6^2 \cdot 3^2 \cdot 2} = 18$

$\sqrt{3} = \sqrt{2 \cdot 3}$
 $= \sqrt{6}$

b) $3\sqrt{2} \cdot 5\sqrt{3} = 15\sqrt{2 \cdot 3}$
 $= 15\sqrt{6}$

c) $(\sqrt{7})^2 = 7$

d) $\sqrt{12} \sqrt{3} \sqrt{18}$
 $= \sqrt{2^2 \cdot 3^2 \cdot 3^2 \cdot 2}$

$\sqrt{2} = \sqrt{16}$

$3\sqrt{2} \cdot \sqrt{2} = 3(\sqrt{2})^2$
 $= 3 \cdot 2 = 6$

$(2\sqrt{3})^2 = 4 \cdot 3 = 12$
 $= 2^2 \cdot (\sqrt{3})^2$

$2\sqrt{3} \cdot 7\sqrt{3} \cdot \sqrt{3}$
 $= 42\sqrt{3}$

$\sqrt{50} = \sqrt{25 \cdot 2} = 5\sqrt{2}$

$\sqrt{19} \cdot \sqrt{19} = (\sqrt{19})^2$
 $= 19$

$(7\sqrt{2})^2 = 49 \cdot 2$
 $= 98$

$2\sqrt{10} \cdot 5\sqrt{15}$
 $= 10\sqrt{2 \cdot 5^2 \cdot 3}$
 $= 10 \cdot 5\sqrt{6} = 50\sqrt{6}$

$\sqrt{18} = 24$
 $2 \cdot 3 \cdot 2 \cdot 4 \cdot 3 \cdot 2$

$5\sqrt{15} \cdot \sqrt{15} = 5 \cdot 15$
 $= 75$

$(-6\sqrt{8})^2 = 36 \cdot 8$
 $= 288$

$4\sqrt{21} \cdot \sqrt{7}$
 $= 4\sqrt{3 \cdot 7^2}$
 $= 4 \cdot 7\sqrt{3} = 28\sqrt{3}$

$\sqrt{36} = 2 \cdot 3$
 $= 6$

$\sqrt{42} \cdot \sqrt{7} = \sqrt{6 \cdot 7 \cdot 7}$
 $= 7\sqrt{6}$

$(-3\sqrt{5})^2 = 9 \cdot 5$
 $= 45$

$2\sqrt{5} \cdot 3\sqrt{7} \cdot 5\sqrt{105}$
 $= 30\sqrt{5 \cdot 7 \cdot 5 \cdot 3 \cdot 7}$
 $= 30\sqrt{5^2 \cdot 7^2 \cdot 3}$
 $= 30 \cdot 5 \cdot 7 \sqrt{3} = 1050\sqrt{3}$

A long time ago in a galaxy far, far away...

$$\left(\sqrt{r}\right)^2 = \sqrt{\left(r\right)^2} = r$$



Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

$$(\sqrt{7})^2$$

$$\sqrt{12} \sqrt{3} \sqrt{18} = \sqrt{6^2 \cdot 2 \cdot 3^4}$$
$$= 18\sqrt{2}$$

$$\sqrt{4 \cdot 3 \cdot 3 \cdot 9 \cdot 2}$$

$$(2\sqrt{3})^2$$

$$= 2 \cdot 3 \cdot 3 \sqrt{2} = 2\sqrt{3} \cdot 7\sqrt{3} \cdot \sqrt{3} = 14\sqrt{3 \cdot 3 \cdot 3}$$
$$= 14 \cdot 3 \sqrt{3} =$$
$$= 18\sqrt{2}$$

$$(7\sqrt{2})^2$$

$$= (-6)^2 (\sqrt{8})^2$$

$$2\sqrt{10} \cdot 5\sqrt{15}$$

$$4\sqrt{21} \cdot \sqrt{7} = 4\sqrt{3 \cdot 7^2} = 4 \cdot 7\sqrt{3}$$
$$= 28\sqrt{3}$$

$$(-6\sqrt{8})^2 = 6^2 (\sqrt{8})^2 = 36 \cdot 8 =$$

$$(-3\sqrt{5})^2 = 3^2 (\sqrt{5})^2$$
$$= 9 \cdot 5 = 45$$

$$2\sqrt{5} \cdot 3\sqrt{7} \cdot 5\sqrt{105} = 30\sqrt{5 \cdot 7 \cdot 5 \cdot 3 \cdot 7}$$
$$= 30 \cdot 5 \cdot 7 \sqrt{3}$$
$$= 1050\sqrt{3}$$



Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

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a) $\sqrt{3} \cdot \sqrt{3}$

$3\sqrt{7} \cdot \sqrt{7}$

$3\sqrt{3} \cdot \sqrt{3}$

$5\sqrt{11} \cdot 2\sqrt{11}$

$2\sqrt{5} \cdot 3\sqrt{5}$

$\sqrt{3} \cdot 2\sqrt{3} \cdot \sqrt{3}$

$2\sqrt{7} \cdot 5\sqrt{7} \cdot \sqrt{7}$

b) $5\sqrt{6} \cdot \sqrt{3} \cdot 3\sqrt{2}$

$3\sqrt{7} \cdot 2\sqrt{14}$

$\sqrt{28} \cdot \sqrt{45}$

$2\sqrt{54} \cdot 3\sqrt{8}$

$\sqrt{12} \cdot \sqrt{18}$

$2\sqrt{5} \cdot \sqrt{2} \cdot \sqrt{15}$

$5\sqrt{12} \cdot \sqrt{24}$

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c) $2\sqrt{3} \cdot \sqrt{2} \cdot \sqrt{15}$

$\sqrt{52} \cdot \sqrt{39}$

$\sqrt{27} \cdot \sqrt{75}$

$3\sqrt{5} \cdot \sqrt{80}$

$\sqrt{300} \cdot 5\sqrt{200}$

$\sqrt{32} \cdot 3\sqrt{24} \cdot \sqrt{8}$

$\sqrt{500} \cdot 3\sqrt{20}$

d) $5^3 \cdot \sqrt{5^3}$

$\sqrt{3} \sqrt{3^3}$

$\sqrt{7^3} \sqrt{7}$

$2\sqrt{11} \sqrt{11}$

$\sqrt{2^5} \sqrt{2}$

$3\sqrt{5^2} \sqrt{5^3}$

$2\sqrt{3^2} \cdot 5\sqrt{3}$

Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

(AM P 37 n° d colonnes 1 → 4)

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actimath p 41 n°11

A

$$\sqrt{3} \cdot \sqrt{3} = \sqrt{3 \cdot 3} = \sqrt{3^2} = 3$$

$$3\sqrt{7} \cdot \sqrt{7} = 3\sqrt{7^2} = 3 \cdot 7 = 21$$
$$= 3(\sqrt{7})^2 = 3 \cdot 7 = 21$$

$$3\sqrt{3} \cdot \sqrt{3}$$

$$5\sqrt{11} \cdot 2\sqrt{11} = 5 \cdot 2 \sqrt{11 \cdot 11}$$
$$= 5 \cdot 2 \cdot 11 = 110$$

$$2\sqrt{5} \cdot 3\sqrt{5}$$

$$\sqrt{3} \cdot 2\sqrt{3} \cdot \sqrt{3} = 2\sqrt{3 \cdot 3 \cdot 3}$$
$$= 2 \cdot 3\sqrt{3} = 6\sqrt{3}$$

$$2\sqrt{7} \cdot 3\sqrt{7} \cdot \sqrt{7} = 10\sqrt{7^2 \cdot 7} = 10 \cdot 7\sqrt{7}$$
$$= 70\sqrt{7}$$

B

$$5\sqrt{6} \cdot \sqrt{3} \cdot 3\sqrt{2} = 15\sqrt{6^2}$$
$$= 15 \cdot 6 = 90$$

$$3\sqrt{7} \cdot 2\sqrt{14} = 6\sqrt{7 \cdot 7 \cdot 2} = 6 \cdot 7\sqrt{2} = 42\sqrt{2}$$

$$\sqrt{28} \cdot \sqrt{45}$$

$$= 6 \cdot 3 \cdot 2^2 \sqrt{3}$$
$$= 72\sqrt{3}$$
$$= 6\sqrt{3^2 \cdot 3 \cdot 2 \cdot 2^3}$$

$$2\sqrt{54} \cdot 3\sqrt{8}$$

$$\sqrt{12} \cdot \sqrt{18} = \sqrt{4 \cdot 3 \cdot 9 \cdot 2} = 6\sqrt{6}$$

$$2\sqrt{5} \cdot \sqrt{2} \cdot \sqrt{15}$$

$$6$$
$$12$$

$$5\sqrt{12} \cdot \sqrt{24} = 5\sqrt{12^2 \cdot 2} = 5 \cdot 12\sqrt{2}$$
$$= 60\sqrt{2}$$

Produit de racines carrées

réduis les expressions suivantes

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

(AM P 37 n° d colonnes 1 → 4)

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$$2\sqrt{3} \cdot \sqrt{2} \cdot \sqrt{15}$$

$$\sqrt{52} \cdot \sqrt{39} = \sqrt{4 \cdot 13 \cdot 3 \cdot 13} = 2 \cdot 13 \sqrt{3} = 26\sqrt{3}$$

$$\sqrt{27} \cdot \sqrt{75}$$

$$3\sqrt{5} \cdot \sqrt{80}$$

$$\sqrt{300} \cdot 5\sqrt{200} = 5\sqrt{3 \cdot 100 \cdot 2} = 500\sqrt{6}$$

$$\sqrt{32} \cdot 3\sqrt{24} \cdot \sqrt{8}$$

$$\sqrt{500} \cdot 3\sqrt{20}$$

$$5^3 \cdot \sqrt{5^3}$$

$$\sqrt{3} \sqrt{3^3}$$

$$\sqrt{7^3} \sqrt{7} = \sqrt{7^4} = 7^2 = 49$$

$$2\sqrt{11} \sqrt{11^3} = 2\sqrt{11^4} = 2 \cdot 11^2 = 242$$

$$\sqrt{2^5} \sqrt{2} = \sqrt{2^6} = 2^3 = 8$$

$$3\sqrt{5^2} \sqrt{5^3} = 3\sqrt{5^4 \cdot 5} = 3 \cdot 25\sqrt{5} = 75\sqrt{5}$$

$$2\sqrt{3^2} \cdot 5\sqrt{3^5} = 10\sqrt{3^6 \cdot 3} = 10 \cdot 3^3 \sqrt{3} = 270\sqrt{3}$$

Produit de racines carrées

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

(AM P 37 n° d colonnes 1 → 4)

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A $\sqrt{44} \cdot \sqrt{11} = \sqrt{4 \cdot 11 \cdot 11}$
 $= \sqrt{2^2 \cdot 11^2} = 2 \cdot 11 = 22$

B $\sqrt{20} \cdot \sqrt{15} = \sqrt{2^2 \cdot 5 \cdot 5 \cdot 3}$
 $= \sqrt{2^2 \cdot 5^2 \cdot 3}$
 $= 2 \cdot 5 \sqrt{3} = 10\sqrt{3}$

$\sqrt{12} \cdot \sqrt{27} = \sqrt{4 \cdot 3 \cdot 9 \cdot 3}$
 $= \sqrt{2^2 \cdot 3^2 \cdot 3^2}$
 $= 2 \cdot 3 \cdot 3 = 18$

$\sqrt{35} \cdot \frac{1}{\sqrt{35}} = \frac{\sqrt{35}}{\sqrt{35}} = 1$
 $= \sqrt{\frac{35}{35}} = \sqrt{1} = 1$

e) $5\sqrt{15} \cdot \sqrt{125}$

f) $(2 - \sqrt{5})\sqrt{5}$
 $= 2\sqrt{5} - \sqrt{5}^2$
 $= 2\sqrt{5} - 5$

g) $(\sqrt{12} - 4)\sqrt{3} = \sqrt{36} - 4\sqrt{3}$
 $= 6 - 4\sqrt{3}$

h) $-\sqrt{32}(\sqrt{18} - \sqrt{2})$
 $= -\sqrt{4^2 \cdot 2 \cdot 2 \cdot 3^2} + \sqrt{4^2 \cdot 2 \cdot 2}$
 $= -4 \cdot 2 \cdot 3 + 4 \cdot 2$
 $= -24 + 8 = -16$

Produit de racines carrées

$$\sqrt{a} \sqrt{b} = \sqrt{a \cdot b}$$

$$a \sqrt{b}$$

A $\sqrt{44} \cdot \sqrt{11}$
 $= \sqrt{2^2 \cdot 11 \cdot 11} = 2 \cdot 11 = 22$

B $\sqrt{20} \cdot \sqrt{15}$
N · S ⇒ distrib
 f) $(2 - \sqrt{5}) \sqrt{5}$
 $= 2\sqrt{5} - \sqrt{5} \cdot \sqrt{5} = 2\sqrt{5} - 5$

$$\sqrt{12} \cdot \sqrt{27}$$

$$\sqrt{35} \cdot \frac{1}{\sqrt{35}} = \frac{\sqrt{35}}{\sqrt{35}} = \sqrt{\frac{35}{35}} = \sqrt{1} = 1$$

e) $5 \sqrt{15} \cdot \sqrt{125}$

S N ⇒ distrib

f) $(2 - \sqrt{5}) \sqrt{5}$
 $= 2\sqrt{5} - (\sqrt{5})^2$
 $= 2\sqrt{5} - 5$

g) $(\sqrt{12} - 4) \sqrt{3} = \sqrt{36} - 4\sqrt{3}$
 $= 6 - 4\sqrt{3}$

h) $-\sqrt{32} (\sqrt{18} - \sqrt{2})$

$$= -\sqrt{4^2 \cdot 2 \cdot 2 \cdot 3^2} + \sqrt{4^2 \cdot 2 \cdot 2}$$

$$= -4 \cdot 2 \cdot 3 + 4 \cdot 2$$

$$= -24 + 8 = -16$$



$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

$$\sqrt{\frac{600}{50}} = \sqrt{12} = 2\sqrt{3}$$

$\frac{\sqrt{20}}{\sqrt{5}} = \sqrt{\frac{20}{5}} = 2$	$\frac{\sqrt{160}}{\sqrt{10}} = 4$	$\frac{\sqrt{294}}{\sqrt{54}} = \dots$	$\frac{\sqrt{600}}{\sqrt{50}} = \dots$
$\frac{\sqrt{75}}{\sqrt{3}} = \sqrt{\frac{75}{3}} = 5$	$\frac{\sqrt{150}}{\sqrt{24}} = \sqrt{\frac{25}{4}} = \frac{5}{2}$	$\frac{\sqrt{12}}{\sqrt{6}} = \sqrt{2}$	$\frac{\sqrt{20000}}{\sqrt{1500}} = \dots$
$\frac{\sqrt{28}}{\sqrt{7}} = \sqrt{\frac{28}{7}} = 2$	$\frac{\sqrt{75}}{\sqrt{3}} = 5$	$\frac{\sqrt{0,4}}{\sqrt{10}} = \sqrt{\frac{0,4}{10}} = 0,2$	$\frac{\sqrt{18}}{\sqrt{2}} = \dots$
$\frac{\sqrt{9}}{\sqrt{16}} = \frac{3}{4}$	$\frac{\sqrt{7}}{\sqrt{25}} = \frac{\sqrt{7}}{5}$	$\frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$	$\frac{\sqrt{98}}{\sqrt{75}} = \dots$

$$\sqrt{\frac{\cancel{20}^4 \cancel{0} \cancel{0} \cancel{0}}{\cancel{+5} \cancel{0} \cancel{0}}} = \sqrt{\frac{40}{3}} = 2\sqrt{\frac{10}{3}}$$

Etude du quotient

$$\frac{\sqrt{a}}{\sqrt{b}} \sqrt{\frac{a}{b}}$$

$$a \sqrt{b}$$



$$\frac{\sqrt{600}}{\sqrt{50}}$$

$$\frac{\sqrt{20000}}{\sqrt{1500}} = \sqrt{\frac{20000}{1500}} = \sqrt{\frac{40}{3}} = 2\sqrt{\frac{10}{3}}$$

$$\frac{\sqrt{18}}{\sqrt{2}}$$

$$\sqrt{\frac{98}{75}}$$

$$\sqrt{\frac{294}{54}}$$

$$\frac{\sqrt{12}}{\sqrt{6}}$$

$$\frac{\sqrt{0,4}}{\sqrt{10}} = \sqrt{\frac{0,4}{10}} = \sqrt{0,04} = \sqrt{\frac{4}{100}} = \frac{2}{10} = \frac{1}{5}$$

$$\sqrt{\frac{3}{4}}$$

A

B

C

$3\sqrt{2} + 5\sqrt{2} = 8\sqrt{2}$	$\sqrt{12} + 5\sqrt{3}$	$7\sqrt{5} - 3\sqrt{5} - 6\sqrt{5}$
$2\sqrt{3} - 7\sqrt{3}$	$2\sqrt{45} - \sqrt{20}$	$\sqrt{7} - 3\sqrt{7} - 2\sqrt{7}$
$7\sqrt{5} + 1\sqrt{5} = 8\sqrt{5}$	$\sqrt{18} + \sqrt{72}$	$3\sqrt{5} - 7\sqrt{45} + 2\sqrt{20}$
$2\sqrt{3} + 4\sqrt{7} =$ $2\sqrt{3} + 4\sqrt{7}$	$\sqrt{98} - \sqrt{50}$	$2\sqrt{75} - 4\sqrt{27} + 2\sqrt{48}$
$\sqrt{7} + \sqrt{7} = 2\sqrt{7}$	$\sqrt{500} - 3\sqrt{45}$	$\sqrt{12} + 4\sqrt{75} - 2\sqrt{16}$



Racines carrées et termes semblables

$$3\sqrt{2} + 5\sqrt{2} = 8\sqrt{2}$$

$$(3+5)\sqrt{2}$$
$$= 8\sqrt{2}$$

$$2\sqrt{3} - 7\sqrt{3} = -5\sqrt{3}$$

$$7\sqrt{5} + \sqrt{5} = 8\sqrt{5}$$

$$2\sqrt{3} + 4\sqrt{7} = 2(\sqrt{3} + 2\sqrt{7})$$

$$\sqrt{7} + \sqrt{7} = 2\sqrt{7}$$

$$a\sqrt{b}$$

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$$\sqrt{4 \cdot 3} = 2\sqrt{3}$$

$$\sqrt{12} + 5\sqrt{3} = 2\sqrt{3} + 5\sqrt{3}$$
$$= 7\sqrt{3}$$

$$2\sqrt{45} - \sqrt{20} = 2 \cdot 3\sqrt{5} - 2\sqrt{5}$$
$$= 4\sqrt{5}$$

$$\sqrt{18} + \sqrt{72} = 3\sqrt{2} + 6\sqrt{2} = 9\sqrt{2}$$

$$\sqrt{98} - \sqrt{50} = 7\sqrt{2} - 5\sqrt{2} = 2\sqrt{2}$$

$$\sqrt{500} - 3\sqrt{45} = 10\sqrt{5} - 3 \cdot 3\sqrt{5}$$
$$= \sqrt{5}$$

Racines carrées et termes semblables

$$7\sqrt{5} - 3\sqrt{5} - 6\sqrt{5} = -2\sqrt{5}$$

$$1\sqrt{7} - 3\sqrt{7} - 2\sqrt{7} = -4\sqrt{7}$$

$$x - 3x - 2x = -4x$$

$$3\sqrt{5} - 7\sqrt{45} + 2\sqrt{20}$$

$$= 3\sqrt{5} - 21\sqrt{5} + 4\sqrt{5}$$
$$= -14\sqrt{5}$$

$$a\sqrt{b}$$

$$2\sqrt{75} - 4\sqrt{27} + 2\sqrt{48}$$

$$= 10\sqrt{3} - 12\sqrt{3} + 8\sqrt{3}$$
$$= 6\sqrt{3}$$

$$\sqrt{12} + 4\sqrt{75} - 2\sqrt{16}$$

$$= 2\sqrt{3} + 20\sqrt{3} - 8$$
$$= 22\sqrt{3} - 8$$

D

E

$17\sqrt{32} - 5\sqrt{2} + 4\sqrt{8}$	$\sqrt{50} - 2\sqrt{8} + 3\sqrt{18} - 7\sqrt{2}$
$3\sqrt{20} + 4\sqrt{45} - 2\sqrt{80}$	$\sqrt{32} - 3\sqrt{243} + \sqrt{128} - \sqrt{27}$
$2\sqrt{3} - \sqrt{300} + 3\sqrt{12}$	$\sqrt{12} + \sqrt{8} - 2\sqrt{2} + 3\sqrt{5}$
$\sqrt{40} + \sqrt{90} - \sqrt{490}$	$2\sqrt{54} - 2\sqrt{24} - \sqrt{150} + \sqrt{6}$
$\sqrt{18} + 3\sqrt{27} - 2\sqrt{25}$	

Racines carrées et termes semblables

$a \sqrt{b}$

Page 19 Série 6

$$17\sqrt{32} - 5\sqrt{2} + 4\sqrt{8}$$

$$= 17 \cdot 4\sqrt{2} - 5\sqrt{2} + 4 \cdot 2\sqrt{2}$$

$$= 68\sqrt{2} - 5\sqrt{2} + 8\sqrt{2}$$

$$= 71\sqrt{2}$$

$$3\sqrt{20} + 4\sqrt{45} - 2\sqrt{80}$$

$$2\sqrt{3} - \sqrt{300} + 3\sqrt{12}$$

$$\sqrt{40} + \sqrt{90} - \sqrt{490}$$

$$\sqrt{18} + 3\sqrt{27} - 2\sqrt{25}$$

$$= 3\sqrt{2} + 9\sqrt{3} - 10$$

$$\sqrt{50} - 2\sqrt{8} + 3\sqrt{18} - 7\sqrt{2}$$

$$\begin{array}{l} 3\sqrt{384} \\ 3\sqrt{927} \end{array} \quad \downarrow \sqrt{9 \cdot 2}$$

$$\sqrt{32} - 3\sqrt{243} + \sqrt{128} - \sqrt{27}$$

$$= 4\sqrt{2} - 3 \cdot 9\sqrt{3} + 8\sqrt{2} - 3\sqrt{3}$$

$$= 12\sqrt{2} - 30\sqrt{3}$$

$$\sqrt{12} + \sqrt{8} - 2\sqrt{2} + 3\sqrt{5}$$

$$2\sqrt{54} - 2\sqrt{24} - \sqrt{150} + \sqrt{6}$$

Racines carrées, distributivité, produits remarquables et binômes conjugués

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Page 21 Série 7

A
Distri simple

B
Distributivité

C
Binômes conjugués

D
carré d'une somme (ou différence) de c

$\sqrt{6}(\sqrt{2}-\sqrt{3})$	$(\sqrt{3}+\sqrt{5})(\sqrt{6}+\sqrt{15})$	$(\sqrt{3}-\sqrt{5})(\sqrt{3}+\sqrt{5})$	$(\sqrt{2}+\sqrt{5})^2$
$\sqrt{5}(\sqrt{30}+\sqrt{20})$	$(2\sqrt{6}+\sqrt{2})(\sqrt{3}-4\sqrt{5})$	$(5+\sqrt{2})(5-\sqrt{2})$	$(\sqrt{7}-\sqrt{3})^2$
$(\sqrt{50}-\sqrt{27})\sqrt{5}$	$(\sqrt{12}-\sqrt{18})(\sqrt{3}-\sqrt{2})$	$(4\sqrt{5}-\sqrt{2})(4\sqrt{5}+\sqrt{2})$	$(\sqrt{3}+5)^2$
$3\sqrt{2}(\sqrt{8}+\sqrt{12})$ $= 12 + 3 \cdot 2\sqrt{6} = 12 + 6\sqrt{6}$	$(3\sqrt{5}+3\sqrt{2})(2\sqrt{5}-5\sqrt{2})$	$(5-\sqrt{8})(5+2\sqrt{2})$	$(\sqrt{3}-2\sqrt{5})^2$
$(2-5\sqrt{3})2\sqrt{3}$	$(\sqrt{45}-\sqrt{28})(3\sqrt{7}-2\sqrt{5})$	$(-3\sqrt{2}+\sqrt{7})(\sqrt{7}+3\sqrt{2})$	$(2\sqrt{7}+1)^2$

$$(a+b)^2 = (a+b)(a+b) = a^2 + 2 \cdot a \cdot b + b^2$$

$$(a-b)^2 = a^2 - 2 \cdot a \cdot b + b^2$$

$$(a+b)(a-b) = a^2 - b^2$$

$$\begin{aligned} \sqrt{6}(\sqrt{2}-\sqrt{3}) &= \sqrt{12} - \sqrt{18} \\ &= \underline{2\sqrt{3}} - \underline{3\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \sqrt{5}(\sqrt{30}+\sqrt{20}) &= \sqrt{5^2 \cdot 6} + \sqrt{5^2 \cdot 4} \\ &= 5\sqrt{6} + 10 \end{aligned}$$

$$\begin{aligned} (\sqrt{50}-\sqrt{27})\sqrt{5} &= \sqrt{5^2 \cdot 2 \cdot 5} - \sqrt{3^2 \cdot 3 \cdot 5} \\ &= 5\sqrt{10} - 3\sqrt{15} \end{aligned}$$

$$\begin{aligned} 3\sqrt{2}(\sqrt{8}+\sqrt{12}) &= 3\sqrt{4^2} + 3\sqrt{2^2 \cdot 2 \cdot 3} = 12 + 6\sqrt{6} \end{aligned}$$

$$\begin{aligned} (2-5\sqrt{3})2\sqrt{3} &= 4\sqrt{3} - 10 \cdot 3 \\ &= 4\sqrt{3} - 30 \end{aligned}$$

$$\begin{aligned} (\sqrt{3}+\sqrt{5})(\sqrt{6}+\sqrt{15}) &= 3\sqrt{2} + 3\sqrt{5} + \sqrt{30} + 5\sqrt{3} \end{aligned}$$

$$\begin{aligned} (2\sqrt{6}+\sqrt{2})(\sqrt{3}-4\sqrt{5}) &= 6\sqrt{2} - 8\sqrt{30} + \sqrt{6} - 4\sqrt{10} \end{aligned}$$

$$(\sqrt{12}-\sqrt{18})(\sqrt{3}-\sqrt{2})$$

$$(3\sqrt{5}+3\sqrt{2})(2\sqrt{5}-5\sqrt{2})$$

$$\begin{aligned} (3\sqrt{5}-2\sqrt{7})(\sqrt{45}-\sqrt{28})(3\sqrt{7}-2\sqrt{5}) &= 9\sqrt{35} - 6 \cdot 5 - 6 \cdot 7 + 4\sqrt{35} \\ &= 13\sqrt{35} - 72 \end{aligned}$$

$$\begin{aligned} &= 9\sqrt{35} - 6 \cdot 5 - 6 \cdot 7 + 4\sqrt{35} \\ &= 13\sqrt{35} - 72 \end{aligned}$$

$$(\sqrt{3} - \sqrt{5})(\sqrt{3} + \sqrt{5}) = (\sqrt{3})^2 - (\sqrt{5})^2$$

$$= 3 - 5 = -2$$

$$(5 + \sqrt{2})(5 - \sqrt{2}) = 5^2 - (\sqrt{2})^2$$

$$= 25 - 2 = 23$$

$$(4\sqrt{5} - \sqrt{2})(4\sqrt{5} + \sqrt{2}) = (4\sqrt{5})^2 - (\sqrt{2})^2$$

$$= 16 \cdot 5 - 2 = 78$$

$$(5 - \sqrt{8})(5 + 2\sqrt{2}) = 5^2 - (\sqrt{8})^2 = 25 - 8 = 17$$

$$(-3\sqrt{2} + \sqrt{7})(\sqrt{7} + 3\sqrt{2}) = (\sqrt{7})^2 - (3\sqrt{2})^2$$

$$= 7 - 18 = -11$$

$$(\sqrt{2} + \sqrt{5})^2 = (\sqrt{2})^2 + 2 \cdot \sqrt{2} \cdot \sqrt{5} + (\sqrt{5})^2$$

$$= 2 + 2 \cdot \sqrt{10} + 5 = 7 + 2\sqrt{10}$$

$$(\sqrt{7} - \sqrt{3})^2 = (\sqrt{7})^2 - 2 \cdot \sqrt{7} \cdot \sqrt{3} + (\sqrt{3})^2$$

$$= 7 - 2\sqrt{21} + 3 = 10 - 2\sqrt{21}$$

$$(\sqrt{3} + 5)^2 = (\sqrt{3})^2 + 2 \cdot \sqrt{3} \cdot 5 + 5^2$$

$$= 3 + 10\sqrt{3} + 25 = 28 + 10\sqrt{3}$$

$$(\sqrt{3} - 2\sqrt{5})^2 = (\sqrt{3})^2 - 2 \cdot \sqrt{3} \cdot 2\sqrt{5} + (2\sqrt{5})^2$$

$$= 3 - 4\sqrt{15} + 20 = 23 - 4\sqrt{15}$$

$$(2\sqrt{7} + 1)^2 = (2\sqrt{7})^2 + 2 \cdot 2\sqrt{7} \cdot 1 + 1^2$$

$$= 4 \cdot 7 + 4\sqrt{7} + 1 = 29 + 4\sqrt{7}$$

Racines carrées, distributivité, produits remarquables et binômes conjugués

Page 21 Série supplémentaire

A

$$\sqrt{5} \cdot (\sqrt{6} + \sqrt{15})$$

$$\sqrt{12} \cdot (\sqrt{48} - \sqrt{5})$$

$$(\sqrt{125} - 3\sqrt{6}) \cdot \sqrt{32}$$

$$(3\sqrt{7} - \sqrt{28}) \cdot \sqrt{3}$$

$$5\sqrt{3} \cdot (2\sqrt{27} - 3\sqrt{20})$$

B

$$(\sqrt{2} - 1) \cdot (\sqrt{2} + 3)$$

$$(\sqrt{5} + 2) \cdot (3 - \sqrt{5})$$

$$(1 - \sqrt{3}) \cdot (5 - 3\sqrt{3})$$

$$(3 + \sqrt{2}) \cdot (2 - \sqrt{3})$$

$$(\sqrt{3} - \sqrt{5}) \cdot (3 + \sqrt{5})$$

C

$$(\sqrt{3} + \sqrt{2}) \cdot (\sqrt{7} - \sqrt{6})$$

$$(2\sqrt{3} - \sqrt{5}) \cdot (3\sqrt{15} - \sqrt{6})$$

$$(\sqrt{24} - 3\sqrt{8}) \cdot (\sqrt{50} + \sqrt{5})$$

$$(5 - 3\sqrt{14}) \cdot (\sqrt{7} - 1)$$

$$(2\sqrt{10} + 3) \cdot (\sqrt{90} - 2)$$

$$\sqrt{5} \cdot (\sqrt{6} + \sqrt{15})$$

B

$$(\sqrt{2} - 1) \cdot (\sqrt{2} + 3)$$

$$\sqrt{12} \cdot (\sqrt{48} - \sqrt{5})$$

$$(\sqrt{5} + 2) \cdot (3 - \sqrt{5})$$

$$(\sqrt{125} - 3\sqrt{6}) \cdot \sqrt{32}$$

$$(1 - \sqrt{3}) \cdot (5 - 3\sqrt{3})$$

$$(3\sqrt{7} - \sqrt{28}) \cdot \sqrt{3}$$

$$(3 + \sqrt{2}) \cdot (2 - \sqrt{3})$$

$$5\sqrt{3} \cdot (2\sqrt{27} - 3\sqrt{20})$$

$$(\sqrt{3} - \sqrt{5}) \cdot (3 + \sqrt{5})$$

$$(\sqrt{3} + \sqrt{2}) \cdot (\sqrt{7} - \sqrt{6})$$

$$(\sqrt{24} - 3\sqrt{8}) \cdot (\sqrt{50} + \sqrt{5})$$

$$(5 - 3\sqrt{14}) \cdot (\sqrt{7} - 1)$$

$$(2\sqrt{3} - \sqrt{5}) \cdot (3\sqrt{15} - \sqrt{6})$$

$$(2\sqrt{10} + 3) \cdot (\sqrt{90} - 2)$$

A long time ago in a galaxy far, far away...

$$\left(\sqrt{r}\right)^2 = \sqrt{\left(r\right)^2} = r$$

$$a \sqrt{b}$$



$$a \sqrt{b}$$

$\sqrt{a^4} = a^2$	$\sqrt{x^6} = x^3$	$\sqrt{b^{12}} = b^6$	$\sqrt{x^7} = x^3 \sqrt{x}$	$\sqrt{y^{11}} = y^5 \sqrt{y}$	$\sqrt{r^9} = r^4 \sqrt{r}$
$\sqrt{a^{15}} = \sqrt{a^{14} \cdot a} = a^7 \sqrt{a}$	$\sqrt{x^{25}} = x^{12} \sqrt{x}$	$\sqrt{y^5} = y^2 \sqrt{y}$	$\sqrt{a^{16}} = a^8$	$\sqrt{4a^7} = 2a^3 \sqrt{a}$	$\sqrt{3a^9} = a^4 \sqrt{3a}$
$\sqrt{5a^6} = a^3 \sqrt{5}$	$\sqrt{9a^7} = 3a^3 \sqrt{a}$	$\sqrt{8a^6} = 2a^3 \sqrt{2}$ $4 \cdot 2 = 2 \sqrt{2} a^3 = 4a^3$	$\sqrt{16a^{12}} = 4a^6$	$\sqrt{27a^7} = \sqrt{9 \cdot 3 \cdot a^6 \cdot a} = 3a^3 \sqrt{3a}$	$\sqrt{18a^5} = 3a^2 \sqrt{2a}$
$7\sqrt{4a^6} = 7 \cdot 2a^3 = 14a^3$	$3\sqrt{12a^5} = 3 \cdot 2\sqrt{3} \cdot a^2 \sqrt{a} = 6a^2 \sqrt{3a}$	$2\sqrt{18x^3}$	$3\sqrt{27x^8}$	$2\sqrt{45x^9}$	$5a\sqrt{3a^6}$
$2x\sqrt{8x^7}$	$3x^2\sqrt{27x^5}$	$3x^3\sqrt{63x^7}$	$2x\sqrt{8x^{12}}$	$5a\sqrt{75a^9}$	$2a\sqrt{32a^{11}}$

Exercices

a

$\sqrt{a^4} =$

a^2

$\sqrt{x^6} =$

x^3

$\sqrt{b^{12}} =$

b^6

$\sqrt{x^7} =$

$$= \sqrt{x^6 \cdot x} \\ = x^3 \sqrt{x}$$

$\sqrt{y^{11}} =$

$y^5 \sqrt{y}$

$\sqrt{r^9} =$

$r^4 \sqrt{r}$

$\sqrt{a^{15}} =$

$a^7 \sqrt{a}$

$\sqrt{x^{25}} =$

$$= \sqrt{x^{24} \cdot x} \\ = x^{12} \sqrt{x}$$

$\sqrt{y^5} =$

$y^2 \sqrt{y}$

$\sqrt{a^{16}} =$

a^8

$\sqrt{4a^7} =$

$2a^3 \sqrt{a}$

$\sqrt{3a^9} =$

$a^4 \sqrt{3a}$

$\sqrt{5a^6} =$

$a^3 \sqrt{5}$

$\sqrt{9a^7} =$

$3a^3 \sqrt{a}$

$\sqrt{8a^6} =$

$$2a^3 \sqrt{2} \\ = 2 \sqrt{2} a^3$$

$\sqrt{16a^{12}} =$

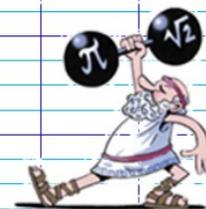
$4a^6$

$\sqrt{27a^7} =$

$3a^3 \sqrt{3a}$

$\sqrt{18a^5} =$

$3a^2 \sqrt{2a}$



Exercices

D $7\sqrt{4a^6}$

$= 14a^3$

$3\sqrt{12a^5}$

$6a^2\sqrt{3a}$

$2\sqrt{18x^3}$

$6x\sqrt{2x}$

$3\sqrt{27x^8}$

$9x^4\sqrt{3}$

$9\sqrt{3}x^4$

$2\sqrt{45x^9}$

$6x^4\sqrt{5x}$

$5a\sqrt{3a^6}$

$5a^4\sqrt{3}$

$= 5\sqrt{3}a^4$

E $2x\sqrt{8x^7}$

$4x^4\sqrt{2x}$

$3x^2\sqrt{27x^5}$

$9x^4\sqrt{3x}$

$3x^3\sqrt{63x^7}$

$9x^6\sqrt{7x}$

$2x\sqrt{8x^{12}}$

$4x^7\sqrt{2}$

$= 4\sqrt{2}x^7$

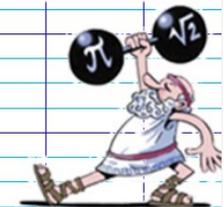
$5a\sqrt{75a^9}$

$25a^5\sqrt{3a}$

$2a\sqrt{32a^{11}}$

$8a^6\sqrt{2a}$

$x^2 \cdot x^2 = x^{2+2}$



A

B

$2\sqrt{x} + 7\sqrt{x} =$	$-2\sqrt{18a} + 5\sqrt{32a} =$
$3\sqrt{a} - 5\sqrt{a} =$	$-4\sqrt{75x} - 12\sqrt{12x} =$
$2\sqrt{3a} - 5\sqrt{3a} =$	$5\sqrt{3x} - 2\sqrt{48x} =$
$9\sqrt{5x} - 7\sqrt{5x} =$	$-3\sqrt{8x} + \sqrt{32x} =$
$\sqrt{a} - \sqrt{18a} =$	$-2x\sqrt{3x^3} + 5\sqrt{3x^5} =$
$\sqrt{27x} - 3\sqrt{12x} =$	$3x^3\sqrt{8x} - 2x\sqrt{18x^5} =$



$$2\sqrt{x} + 7\sqrt{x}$$

$$-2\sqrt{18a} + 5\sqrt{32a}$$

$$3\sqrt{a} - 5\sqrt{a}$$

$$-4\sqrt{75x} - 12\sqrt{12x}$$

$$2\sqrt{3a} - 5\sqrt{3a}$$

$$5\sqrt{3x} - 2\sqrt{48x}$$

$$9\sqrt{5x} - 7\sqrt{5x}$$

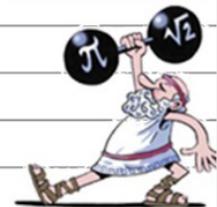
$$-3\sqrt{8x} + \sqrt{32x}$$

$$\sqrt{a} - \sqrt{18a}$$

$$-2x\sqrt{3x^3} + 5\sqrt{3x^5}$$

$$\sqrt{27x} - 3\sqrt{12x}$$

$$3x^3\sqrt{8x} - 2x\sqrt{18x^5}$$



A

$$\sqrt{x} \cdot \sqrt{3x} =$$

$$5\sqrt{y} \cdot 2\sqrt{y} =$$

$$7\sqrt{x} \cdot \sqrt{x^3} =$$

$$3\sqrt{x^3} \cdot \sqrt{x^5} =$$

$$2\sqrt{x^7} \cdot \sqrt{x^3} =$$

B

$$3\sqrt{x^4} \cdot \sqrt{x} =$$

$$5\sqrt{x^2} \cdot \sqrt{x^5} =$$

$$4\sqrt{a^3} \cdot 3\sqrt{a^8}$$

$$2\sqrt{x} \sqrt{x^5} \sqrt{x^7}$$

$$3\sqrt{4a^5} \cdot 2\sqrt{a^3}$$



A



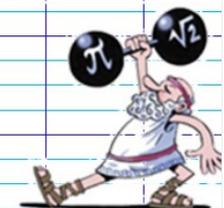
$$\sqrt{x} \cdot \sqrt{3x} =$$

$$5\sqrt{y} \cdot 2\sqrt{y} =$$

$$7\sqrt{x} \cdot \sqrt{x^3} =$$

$$3\sqrt{x^3} \cdot \sqrt{x^5} =$$

$$2\sqrt{x^7} \cdot \sqrt{x^3} =$$



B ★

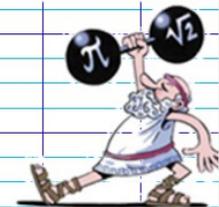
$$3 \sqrt{x^4} \cdot \sqrt{x} =$$

$$5 \sqrt{x^2} \cdot \sqrt{x^5} =$$

$$4 \sqrt{a^3} \cdot 3 \sqrt{a^8}$$

$$2 \sqrt{x} \sqrt{x^5} \sqrt{x^7}$$

$$3 \sqrt{4a^5} \cdot 2 \sqrt{a^3}$$



Série 11 : Racines carrées et Equations : détermine la valeur de a dans les cas suivants

$$\sqrt{a} = 8$$

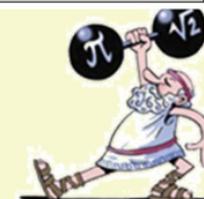
$$\sqrt{100} = \frac{a}{2}$$

$$2 \cdot \sqrt{a} = 6$$

$$\sqrt{100} = 2a$$

$$\sqrt{25} = a + 1$$

$$4 + \sqrt{a} = 7$$



A long time ago in a galaxy far, far away...

$$(\sqrt{r})^2 = \sqrt{(r)^2} = r$$

$$a \sqrt{b}$$

Exercices de synthèse

