

## Działania na pierwiastkach

### I Wyłączanie czynnika przed znak pierwiastka

$$\sqrt{1260} = \sqrt{\underset{\substack{\vee \\ 2}}{2} \cdot \underset{\substack{\vee \\ 3}}{2} \cdot 3 \cdot 3 \cdot 5 \cdot 7} = 6\sqrt{35}$$

$$\sqrt{1260} = \sqrt{36 \cdot 35} = \sqrt{36} \cdot \sqrt{35} = 6\sqrt{35}$$

$$\begin{array}{r|l} 1260 & :2 \\ 630 & :2 \\ 315 & :3 \\ 105 & :3 \\ 35 & :5 \\ 7 & :7 \\ 1 & \end{array}$$

$$\sqrt{120} = \sqrt{\underset{\substack{\vee \\ 2}}{2} \cdot 2 \cdot 2 \cdot 3 \cdot 5} = 2\sqrt{30}$$

$$\sqrt{120} = \sqrt{4 \cdot 30} = \sqrt{4} \cdot \sqrt{30} = 2\sqrt{30}$$

$$\begin{array}{r|l} 120 & :2 \\ 60 & :2 \\ 30 & :2 \\ 15 & :3 \\ 5 & :5 \\ 1 & \end{array}$$

1. Zapisz w postaci  $a\sqrt{b}$

a)  $\sqrt{40} + \sqrt{90} - \sqrt{640}$

b)  $\sqrt{20} + \sqrt{245}$

c)  $\sqrt{32} - \sqrt{18} + 3\sqrt{50}$

d)  $3\sqrt{20} - 2\sqrt{45} + 0,4\sqrt{80}$

e)  $2\sqrt{48} - 0,5\sqrt{75} - 0,6\sqrt{27}$

f)  $\sqrt{3}(\sqrt{27} + \sqrt{75} - \sqrt{300})$

g)  $\sqrt{5}(\sqrt{45} - \sqrt{500} + \sqrt{20})$

h)  $\sqrt{2}(\sqrt{8} - \sqrt{18} - \sqrt{72})$

i)  $\sqrt{6}(\sqrt{24} - \sqrt{54} - \sqrt{150})$

## II Usuwanie niewymierności

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

$$\frac{3}{\sqrt{5}} = \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$$

$$\frac{\sqrt{3}-3}{\sqrt{3}} = \frac{\sqrt{3}-3}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{(\sqrt{3}-3) \cdot \sqrt{3}}{3} = \frac{3-3\sqrt{3}}{3} = \frac{3 \cdot (1-\sqrt{3})}{3} = 1-\sqrt{3}$$

1. Usuń niewymierność z mianownika

a)  $\frac{2}{\sqrt{5}}$

b)  $\frac{7}{\sqrt{2}}$

c)  $\frac{6\sqrt{2}}{\sqrt{5}}$

d)  $\frac{2\sqrt{3}}{\sqrt{7}}$

e)  $\frac{2-\sqrt{5}}{\sqrt{5}}$

f)  $\frac{6-\sqrt{3}}{\sqrt{3}}$

g)  $\frac{2\sqrt{3}-9}{\sqrt{3}}$

h)  $\frac{4\sqrt{5}-1}{\sqrt{5}}$

i)  $\frac{2\sqrt{7}-7}{\sqrt{7}}$

j)  $\frac{8\sqrt{2}+4}{\sqrt{2}}$

k)  $\frac{2\sqrt{11}+4}{\sqrt{11}}$