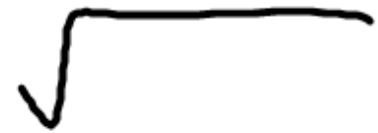


# Radicals



Square roots

Perfect squares :

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

121, 144, 169, 196, 225,  $\pi^2$ ,  $x^2$

$$y^2, z^{\boxed{6}} = z^3 \cdot z^3 = (z^3)^2 \quad z^{14} = z^7 \cdot z^7$$
$$\sqrt{z^6} = \sqrt{(z^3)^2} = z^3$$

Evaluate:

$$\sqrt{100} = 10$$

$$\sqrt{25} = 5$$

$$\sqrt{9x^2} = 3x$$

$$3x \cdot 3x = 9x^2$$

$$\sqrt{169x^{18}} = 13x^9$$

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

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

Largest perfect square factor

1, 2, ④, 8, ⑩, 32

$$\begin{aligned} \sqrt{4 \cdot 8} &= \sqrt{4} \cdot \sqrt{8} = 2\sqrt{8} = 2\sqrt{4 \cdot 2} = 2\sqrt{4} \cdot \sqrt{2} \\ &= 2 \cdot 2 \cdot \sqrt{2} \\ &= 4\sqrt{2} \end{aligned}$$

2 ④

$$\begin{aligned}\sqrt{1200} &= \sqrt{100 \cdot 12} = \sqrt{100} \cdot \sqrt{12} = 10\sqrt{12} \\ &= 10\sqrt{3 \cdot 4} = 10 \cdot 2\sqrt{3}\end{aligned}$$

$$\sqrt{200} = \sqrt{100 \cdot 2} = 10\sqrt{2} \qquad = 20\sqrt{3}$$

$$2y\sqrt{49y} = 2y\sqrt{49} \cdot \sqrt{y} = 2y \cdot 7 \cdot \sqrt{y} = 14y\sqrt{y}$$

$$\begin{aligned}\sqrt{75 \cdot T^4} &= \sqrt{75} \cdot \sqrt{T^4} = \sqrt{25 \cdot 3} \cdot \sqrt{T^4} \\ &= 5\sqrt{3} \cdot \sqrt{T^2 \cdot T^2} \\ &= 5T^2 \cdot \sqrt{3}\end{aligned}$$

$$3x\sqrt{40x^5} = 3x\sqrt{40} \cdot \sqrt{x^5} = 3x\sqrt{4 \cdot 10} \cdot \sqrt{x^5}$$

$$\sqrt{x^5}$$

$$\sqrt{x \cdot x \cdot x \cdot x \cdot x}$$

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

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

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

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

$$= 6x \cdot \sqrt{10} \cdot \sqrt{x^5}$$

$$= 6x \cdot \sqrt{10} \cdot x^2 \cdot \sqrt{x}$$

$$= 6x \cdot x^2 \cdot \sqrt{10} \cdot \sqrt{x}$$

$$= 6x^3 \cdot \sqrt{10x}$$



$$\begin{aligned} -3\sqrt{800} &= -3 \cdot \sqrt{2} \cdot \sqrt{400} \\ &= -3 \cdot 20 \cdot \sqrt{2} \\ &= -60 \cdot \sqrt{2} \end{aligned}$$

-