

12, 2, 10, 16, 18

2. a. $\sqrt{64} = \pm 8$

b. $\sqrt{-64} = \text{undefined}$

c. $\sqrt[3]{64} = 4$

d. $\sqrt[3]{-64} = -4$

10. $\sqrt{\frac{1}{16}} = \frac{\sqrt{1}}{\sqrt{16}} = \pm \frac{1}{4}$

$\sqrt{\frac{81}{16}} = \pm \frac{9}{4}$

$\sqrt[4]{\frac{1}{16}} = \pm \frac{1}{2}$

$\sqrt[4]{\frac{81}{16}} = \pm \frac{3}{2}$

12. $\sqrt[3]{10^{-3}} = \sqrt[3]{\frac{1}{10^3}} = \frac{1}{10}$

$(-10)^3 = (-10)(-10)(-10)$

$(10)^{-3} = \frac{1}{10^3}$

b) $\sqrt[3]{10^{-6}} = \sqrt[3]{\frac{1}{10^6}} = \sqrt[3]{\frac{1}{10^2 \cdot 10^2 \cdot 10^2}}$

$\frac{1}{10^2} = \frac{1}{100}$

c) $\sqrt[3]{10^{-9}} = \sqrt[3]{\frac{1}{10^9}} = \frac{1}{10^3} = \frac{1}{1000}$
 $= 0.001$

d) $\sqrt[3]{10^{-30}} = \sqrt[3]{\frac{1}{10^{30}}} = \frac{1}{10^{10}}$

$\frac{1}{10000000000} = 1 \cdot 10^{-10}$

0.0000000001

$$16. \sqrt{y^2} = \sqrt{0}$$

$$y = \pm 0$$

$$y = 0$$

$$18. y^2 - 7 = 0$$

$$\sqrt{y^2} = \sqrt{7}$$

$$y = \pm \sqrt{7}$$

$$y \approx \pm 2.646$$

$3/2$

$$19. \quad 9x^2 = 4$$

Simplifying Square Roots.

$$\sqrt{98} = \sqrt{2 \cdot 7^2} = \sqrt{2} \cdot \sqrt{7^2}$$

2 49
 ^ ^
 2 7 7

$7\sqrt{2}$

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

5 15
 ^ ^
 5 3 5

$$\sqrt{\frac{4}{5}} = \frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{2\sqrt{5}}{5}}$$

$$\sqrt{\frac{7}{3}} = \frac{\sqrt{7}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{21}}{3}$$