

$$12, 2, 10, 16, 18$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$0.0000000001$$

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

$$y = \pm 0$$

$$y = 0$$

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

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

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

$$y \approx \pm 2.646$$

$3/2$

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

Simplifying Square Roots.

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

2 ^ 49
 ^
 7 7

$7\sqrt{2}$

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

5 ^ 15
 ^
 3 5

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

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