

**Simplify the radical expression completely.
No decimal answers.**

1) $\pm\sqrt{18}$

2) $\sqrt{112}$

3) $-\sqrt{196}$

4) $\frac{1}{3}\sqrt{45}$

5) $\sqrt{\frac{110}{10}}$

6) $\frac{5}{\sqrt{3}}$

7) $\sqrt{54} - 2\sqrt{6}$

8) $-3\sqrt{5} + 6\sqrt{20} + 2\sqrt{25}$

9) $\sqrt{6}(5\sqrt{3} - 1)$

10) $\sqrt{27} \cdot \sqrt{3}$

11) $\sqrt{\frac{80}{5}}$

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

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

Solve the radical equation.

Check for "extraneous solutions." No decimal answers.

14) $\sqrt{y} = 49$

15) $\sqrt{4x} = -4$

16) $\sqrt{a+7} = \sqrt{2a-1}$

17) $\sqrt{3x+1} + 10 = 0$

18) $16 = 4\sqrt{k} - 12$

Use the Pythagorean Theorem to answer each question. No decimal answers.

- 19) Do the following measurements form a right triangle?

$$2.5 \text{ yd}, \quad 2.4 \text{ yd}, \quad 0.7 \text{ yd}$$

- 20) Find the missing side of the triangle given:

$$a = 2 \quad b = 6 \quad c = ?$$

- 21) Find the missing side of the triangle given:

$$a = 3 \quad b = ? \quad c = 6$$

Applications. Round answers to the nearest hundredth when necessary.

- 22) A rectangle is 5 times as long as it is wide. The area of the rectangle is 100 ft^2 . Find the dimensions of the rectangle in simplest radical form.

- 23) The ratio of the height : width of a window is equal to the golden ratio $(1 + \sqrt{5}) : 2$. The width window of the is 36 inches. Find the height of the window. Express your answer in simplest radical form.

- 24) The equation $V = \sqrt{\frac{Fr}{m}}$ gives the speed V in m/sec of an object in a horizontal circle, where F is centripetal force, r is radius and m is mass of the object. Find the radius when $F = 6 \text{ N}$, $m = 2 \text{ kg}$, and $V = 3 \text{ m/sec}$.

- 25) The perimeter of a rectangle is 20. Its dimensions are 4 and $\sqrt{x-1}$. Find the value of x .