

Do Now:

Evaluate the following:

1) $\sqrt{4}$
 2, -2

2) $\sqrt{36}$
 6, -6

3) $\sqrt{64}$
 8, -8

4) $\sqrt{x^2}$
 x

Every square root has two roots

omework:

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HW ANSWERS

1) C

6) $3\sqrt{5}$

2) A

7) $20 - 2\sqrt{5}$

3) D

8) $4 - \sqrt{2}$

4) $8\sqrt{2}$

9) $-\frac{5}{2}$

5) $-6\sqrt{3}$

$$\frac{16 - \sqrt{32}}{4}$$

$$\frac{16 - \sqrt{16} \sqrt{2}}{4}$$

$$\frac{16}{4} - \frac{4\sqrt{2}}{4}$$

$$4 - \sqrt{2}$$

$$\frac{16 - 4\sqrt{2}}{4}$$

$$4 - \sqrt{2}$$

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Solving Quadratics with Square Roots

Quadratic Equations

Standard form $ax^2 + bx + c = 0$

To Solve a Quadratic when $b = 0$

Isolate the "squared" expression

$$x^2 = c$$

Take the square root of both sides

$$x = \pm \sqrt{c}$$

$$x = \sqrt{c}, -\sqrt{c}$$

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Solve for x:

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \pm 4$$

OR

$$x = 4, -4$$

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Solving an Equation Using Square Roots

Isolate the "squared" expression

$$\sqrt{(x-h)^2} = \sqrt{c}$$

Take the square root of both sides

$$x - h = \pm \sqrt{c}$$

$$\begin{array}{r} x - h = \sqrt{c} \\ +h \quad +h \\ \hline x = h + \sqrt{c} \end{array}$$

$$\begin{array}{r} x - h = -\sqrt{c} \\ +h \quad +h \\ \hline x = h - \sqrt{c} \end{array}$$

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$$\begin{array}{l} \sqrt{(x-3)^2} = \sqrt{64} \\ x-3 = \pm 8 \\ \begin{array}{l} + \\ x-3 = 8 \\ +3 \quad +3 \\ \hline x = 11 \end{array} \quad \begin{array}{l} - \\ x-3 = -8 \\ +3 \quad +3 \\ \hline x = -5 \end{array} \\ \boxed{x = -5, 11} \end{array}$$

$$\begin{array}{l} 2(x-2)^2 + 3 = 95 \\ -3 \quad -3 \\ \hline 2(x-2)^2 = 92 \\ \frac{2}{2} \quad \frac{2}{2} \\ \sqrt{(x-2)^2} = \sqrt{46} \\ x-2 = \pm \sqrt{46} \\ +2 \quad +2 \\ \hline x = 2 \pm \sqrt{46} \end{array}$$

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$$3) 7v^2 + 1 = 29$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 7v^2 = 28 \\ \hline v^2 = 4 \\ \sqrt{v^2} = \sqrt{4} \\ v = \pm 2 \end{array}$$

$$5) 4r^2 + 1 = 325$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 4r^2 = 324 \\ \hline r^2 = 81 \\ r = \pm 9 \end{array}$$

$$4) (x-2)^2 + 7 = 7$$

$$\begin{array}{r} -7 \quad -7 \\ \hline \sqrt{(x-2)^2} = \sqrt{0} \\ x-2 = 0 \\ \boxed{x=2} \end{array}$$

$$6) 9n^2 + 10 = 91$$

$$\begin{array}{r} -10 \quad -10 \\ \hline 9n^2 = 81 \\ n^2 = 9 \\ n = \pm 3 \end{array}$$

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7) $6x^2 + 3 = 387$

$x = \pm 8$

9) $2(x-2)^2 - 3 = 95$

$x = -5, 9$

8) $7x^2 - 7 = 168$

$x = \pm 5$

10) $25x^2 + 10 = 46$

$x = \pm \frac{6}{5}$

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