

Questions on 3.10 HW?

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Simplify each of the radical expressions. Use rational exponents if desired.

13. $\sqrt[4]{81x^8y^{12}}$ 14. $\sqrt{\frac{a^7b^{10}}{a^3}}$ 15. $\sqrt[5]{625x^{12}}$

Handwritten work for problem 13:

$$81^{1/4} \cdot x^{8/4} \cdot y^{12/4}$$

$$3^{4/4} \cdot x^2 \cdot y^3 = \boxed{3x^2y^3}$$

16. $(\sqrt{n})^5$ 17. $\sqrt[3]{-27}$ 18. $(\sqrt{8})(\sqrt{3^2})(2)$

Fill in the table so each expression is written in radical form and with rational exponents.

	Radical Form	Exponential Form
19.	$\sqrt[4]{8^3}$	
20.		$256^{\frac{3}{4}}$

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		$16^{\frac{3}{2}} \cdot 4^{\frac{1}{2}}$
23.	$\sqrt[10]{x^{23}y^{31}}$	
24.	$\sqrt[5]{64a^9b^{18}}$	$64^{\frac{1}{5}} \cdot a^{\frac{9}{5}} b^{\frac{18}{5}}$ $4^{\frac{3}{5}} \cdot a^{\frac{9}{5}} \cdot b^{\frac{18}{5}}$

$64 = 4^3$
 $\begin{matrix} & 8 & & 8 & \\ & \swarrow & & \searrow & \\ 4 & 2 & & 4 & 2 \end{matrix}$

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16. $(\sqrt{n})^5$ 17. $\sqrt[3]{-27}$ 18. $(\sqrt{8})(\sqrt{3^2})(2)$
 ~~$2 \cdot \sqrt{2} \cdot 3^{2/2} (2) =$~~
 $2 \cdot \sqrt{2} \cdot 3 (2) =$ $12\sqrt{2}$

Fill in the table so each expression is written in radical form and with rational exponents.

	Radical Form	Exponential Form
19.	$\sqrt[4]{8^3}$	
20.		$256^{\frac{3}{4}}$
21.	$\sqrt[4]{2^7 \cdot 4^5}$	
22.		

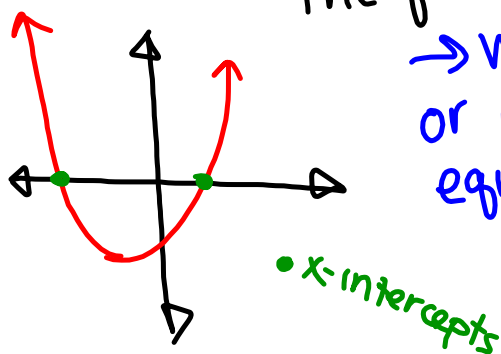
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Solving Quadratic Equations

What does this mean?

→ Find solutions (also called x-intercepts, roots, zeroes). The solutions are where the quadratic crosses the x-axis.

→ We can find solutions using a graph or algebraically, by setting equation equal to 0 and solving for x .



I: Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$6n^2 - 116 = -5n$$

$$\begin{array}{ccc} & +5n & +5n \\ \hline & & \end{array}$$

$$6n^2 + 5n - 116 = 0$$

$$a = 6$$

$$b = 5$$

$$c = -116$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 6 \cdot (-116)}}{2 \cdot 6} = \frac{-5 \pm \sqrt{25 + 2784}}{12}$$

$$= \frac{-5 \pm \sqrt{2809}}{12} = \frac{-5 \pm 53}{12}$$

$$x = \frac{-5 + 53}{12} \quad \& \quad \frac{-5 - 53}{12}$$

$$x = \frac{48}{12} \quad \& \quad -\frac{58}{12}$$

$$x = 4, -\frac{29}{6}$$

$$7p^2 = -1$$

$$\begin{array}{ccc} & +1 & +1 \\ \hline & & \end{array}$$

$$a = 7 \quad 7p^2 + 1 = 0$$

$$b = 0$$

$$c = 1$$

$$b^2 + 10b = 7$$

$$11p^2 - 2 = -p$$

2 - Taking Square Roots (most useful when we have no bx term).

$$6b^2 + 6 = 156$$

$$\frac{-6}{6} \quad \frac{-6}{6}$$

$$b^2 = \frac{150}{6}$$

$$\sqrt{b^2} = \sqrt{25}$$

$$b = \pm 5 \quad \text{or } b = -5, 5$$

$$2 - 7n^2 = -78$$

$$9k^2 + 4 = 8$$

$$9x^2 + 2 = -123$$

3: Factoring

$$\begin{array}{r}
 v^2 = 2v + 8 \\
 \begin{array}{r}
 -2v \quad -2v \\
 \hline
 -8 \quad +8
 \end{array} \\
 \hline
 v^2 - 2v - 8 = 0 \\
 (v-4)(v+2) = 0 \\
 \boxed{v = 4, -2}
 \end{array}$$

$$\begin{array}{l}
 -2, 4 \rightarrow 2 \\
 2, -4 \rightarrow -2
 \end{array}$$

$$n^2 - 16 = 0$$

$$n^2 = 8n - 15$$

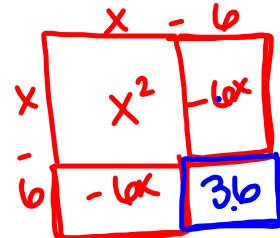
$$x^2 + 3x = 0$$

4: Completing the Square

$$x^2 - 12x + 25 = -10$$

$$\begin{array}{r} +10 \qquad +10 \\ \hline x^2 - 12x + 35 = 0 \end{array}$$

$$\begin{array}{r} +1 \qquad +1 \\ \hline x^2 - 12x + 36 = 1 \end{array}$$



$$x^2 - 12x + 36 = 1$$

$$(x-6)(x-6) = 1$$

$$\sqrt{(x-6)^2} = \sqrt{1}$$

$$x - \cancel{6} = \pm 1$$

$$\quad \quad \quad +6 \quad \quad \quad +6$$

$$x = 6 \pm 1$$

$$x^2 + 4x - 91 = -9$$

$$x = 6 + 1 \quad \& \quad 6 - 1$$

$$\boxed{x = 7 \quad \& \quad 5}$$

$$a^2 + 2a - 75 = 5$$

Homework

Solving Quadratic Equations WKS