

Warm Up (2/7/18) PARCC Practice

Factored form \longrightarrow Standard form

The polynomial $(2x - 1)(x^2 - 2) - x(x^2 - x - 2)$ can be written in the form $ax^3 + bx^2 + cx + d$, where $a, b, c,$ and d are constants.

\hookrightarrow Distribute

$$1x^3 + 0x^2 - 2x + 2$$

What are the values of $a, b, c,$ and d ?

FOIL/Box Method

	$2x$	-1
x^2	$2x^3$	$-1x^2$
-2	$-4x$	$+2$

$$-x(x^2 - x - 2)$$

$$2x^3 - 1x^2 - 4x + 2 - x^3 + x^2 + 2x$$

$a = 1$
$b = 0$
$c = -2$
$d = 2$

~~$x^3 + 2x$~~

Solving Quadratic Equations by Factoring

Step-by-step Instructions

Solve the following quadratic equation.

If there are more than 2 terms we should consider solving by factoring.

$$2m^2 - 3 = 5m$$

$$\begin{array}{r} -5m \quad -5m \\ \hline 2m^2 - 5m - 3 = 0 \end{array}$$

$2 \cdot -3 = -6$
 ~~$\begin{array}{r} -6 \quad 1 \\ -5 \end{array}$~~

$$\begin{aligned} (2m^2 - 6m) + (1m - 3) &= 0 \\ 2m(m-3) + 1(m-3) &= 0 \\ (m-3)(2m+1) &= 0 \end{aligned}$$

$$\begin{array}{l|l} m-3=0 & 2m+1=0 \\ +3 \quad +3 & -1 \quad -1 \\ \hline m=3 & 2m=-1 \\ & \frac{2m}{2} = \frac{-1}{2} \\ & m = -\frac{1}{2} \end{array}$$

$$\boxed{m=3 \quad \text{and} \quad m=-\frac{1}{2}}$$

1. Gather all terms to one side of the equal sign.

2. Use the appropriate factoring technique on your new quadratic. (use AC method)

3. Set each binomial equal to 0

4. Solve each equation separately.

5. Rewrite all of your solutions. (for clarity, optional.)

Example 1

Solve the following quadratic equation

$$n^2 - n - 20 = 0$$

$$(n - 5)(n + 4) = 0$$

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$$\begin{array}{r} n - 5 = 0 \\ +5 \quad +5 \\ \hline \boxed{n = 5} \end{array}$$
$$\begin{array}{r} n + 4 = 0 \\ -4 \quad -4 \\ \hline \boxed{n = -4} \end{array}$$

~~$$\begin{array}{r} -20 \\ -5 \quad 4 \\ -1 \end{array}$$~~

Example 2

Find the zeroes of the quadratic expression

$$x^2 + 4x + 3$$

$$(x+3)(x+1) = 0$$

$$\begin{array}{l} x+3=0 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\boxed{x = -3}$$

$$\begin{array}{l} x+1=0 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\boxed{x = -1}$$

~~$$\begin{array}{r} 3 \\ 3 \quad 1 \\ 4 \end{array}$$~~

Example 3

What are all of the real roots of the quadratic equation $y = 3x^2 - 12x + 9$?

$$3x^2 - 12x + 9 = 0 \quad \text{Factor out the GCF}$$

$$3(x^2 - 4x + 3) = 0$$

Set Factors equal to zero

$$3(x-3)(x-1) = 0$$

~~$$\begin{array}{r} 3 \\ -3 \end{array} \begin{array}{r} -1 \\ -4 \end{array}$$~~

$$\begin{array}{r} x-3 = 0 \\ +3 \quad +3 \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} x-1 = 0 \\ +1 \quad +1 \\ \hline x = 1 \end{array}$$