

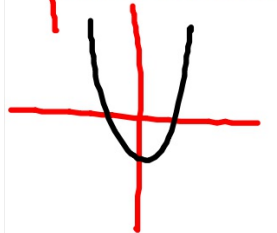
Content and Language Objective:

Students will review the different forms of a quadratic equation and identify what each form is useful for.

Warm Up

When you hear the words quadratic and form what are some things that come to mind, list anything an equation, an explanation, pictures.

$y = x^2$
parabolas



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

the letter u

3 forms

1. factored form (intercept)
2. Standard or general
3. vertex form

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FORM #1: General or Standard Form

$$f(x) = ax^2 + bx + c \quad \text{used in quadratic formula}$$
$$0 = ax^2 + bx + c$$

Convert to general form

1. $f(x) = 2x(x-5) \Rightarrow 2x^2 - 10x$

2. $f(x) = (x+2)^2 = (x+2)(x+2)$

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

3. $f(x) = 3(x+1)^2 + 5$

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

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FORM #2: vertex form

$$f(x) = a(x-h)^2 + k \quad (h, k)$$

Example

$$f(x) = 3(x+2)^2 - 1 \quad (-2, -1)$$

$$f(x) = -4x^2 \quad (0, 0)$$

$$f(x) = 5 - 2(x-3)^2 \quad (3, 5) \quad (-1, 5)$$
$$-2(x-3)^2 + 5 \quad (3, 0)$$

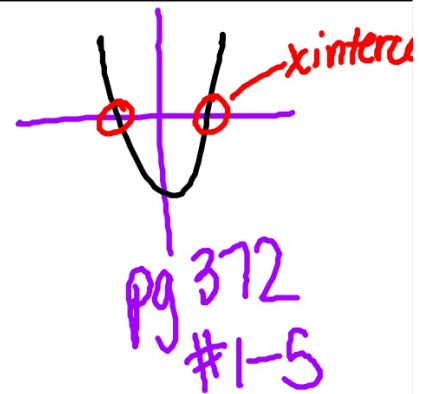
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FORM #3: Factored form (intercept)

$$f(x) = a(x \pm r_1)(x \pm r_2)$$

gives x-intercepts, roots, zeros



Example

$$y = 2x(x+5)$$

$$\begin{array}{r} 2x = 0 \\ \underline{2} \quad \underline{2} \\ x = 0 \\ (0,0) \end{array}$$

$$\begin{array}{r} x+5=0 \\ \underline{-5} \quad \underline{-5} \\ x = -5 \\ (-5,0) \end{array}$$

$$3(x+2)(x-4)$$

$$\begin{array}{r} x+2=0 \\ \underline{-2} \quad \underline{-2} \\ x = -2 \\ (-2,0) \end{array}$$

$$\begin{array}{r} x-4=0 \\ \underline{+4} \quad \underline{+4} \\ x = 4 \\ (4,0) \end{array}$$

Content and Language Objective:

Students will be able to identify forms of an equation, write equations in factored form and use factoring to find the zeros of a polynomial function. Students will then explain in writing the relationship between the zeros of a polynomial function and roots.

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