

**Warm-up:** Oct. 23, 2017

For the function:  $y = \frac{1}{2}x^2 - 4x + 3$

Answer the following:

- Use partial factoring to determine two points that are the same distance from the axis of symmetry. State the AOS
- Determine the coordinates of the vertex
- Graph the function

$y = (\frac{1}{2}x^2 - 4x) + 3$   
 $0 = \frac{1}{2}x(x - 8)$   
 $\frac{1}{2}x = 0 \quad x - 8 = 0$   
 $x = 0 \quad x = 8$   
 $f(0) = \frac{1}{2}(0)^2 - 4(0) + 3 = 3$   
 $f(8) = \frac{1}{2}(8)^2 - 4(8) + 3 = 3$   
 Points:  $(0, 3)$  and  $(8, 3)$

$y = \frac{1}{2}(4)^2 - 4(4) + 3 = -5$   
 $y = \text{vertex } (4, -5)$   
 $\text{AOS: } \frac{0+8}{2} = 4$   
 $x = 4$

Apr 4-9:39 AM

**Example:** Oct. 23, 2017

Find the zeros of  $y = x^2 - 2x - 3$  by using the graphing calculator and sketch the function:

$y = x^2 - 2x - 3$   
 $y = (x+1)(x-3)$   
 $0 = (x+1)(x-3)$   
 $x+1=0 \Rightarrow x=-1$   
 $x-3=0 \Rightarrow x=3$   
 Zeros:  $x = -1$  and  $x = 3$

$x = 3$  ✓  
 $x = -1$  ✓

$\frac{-1+3}{2} = 1$   
 $x = 1$   
 vertex  $(1, -4)$

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Always check to see if you can factor anything out first!!  
**Factoring Polynomials When...**

The degree is 2 (Quadratic)  
 The number of terms is 3 (Trinomial)  
 The coefficient of the squared term is 1

$ax^2 + bx + c$   
 $x^2 + bx + a \cdot c$

SLIDE  $\rightarrow$   $\begin{matrix} a & c \\ \times & \\ b & \end{matrix}$   $\rightarrow$  Add

Steps for Factoring Success

1. SLIDE (And multiply)
2. DIVIDE (And reduce fractions)
3. BOTTOMS UP

Example: Factor  $7x^2 + 29x + 4$

$x^2 + 29x + 28$

$\begin{matrix} 28 \\ 1 \times 28 \\ 29 \end{matrix}$

DIVIDE:  $(x + \frac{1}{7})(x + 28)$

Bottoms Up!  $(x + \frac{1}{7})(x + 4)$   
 $(7x + 1)(x + 4)$

L 1

Mar 27-11:37 AM

19.  $2x^2 + 5x + 3$

1. Slide  
 2. Div  
 3. BU

$(x + \frac{3}{2})(x + \frac{2}{2})$

a-  $(x + \frac{3}{2})(x + 1)$   
 $(2x + 3)(x + 1)$

$\begin{matrix} ac & & \\ & 6 & \\ & \times & \\ & 3 & 2 \\ & \times & \\ & 5 & \\ & & b \end{matrix}$  Add

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$$13 \quad a^2 + 2ab + b^2$$
$$(a + b)(a + b)$$

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## Attachments

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7s3e1 finalt.mp4

7s3e2 finalt.mp4

7s3e3 finalt.mp4

fm7s3-p1.tns

fm7s3-p2.tns

fm7s3-p8.tns

FM11-7s3-2.gsp

FM11-7s3.gsp