

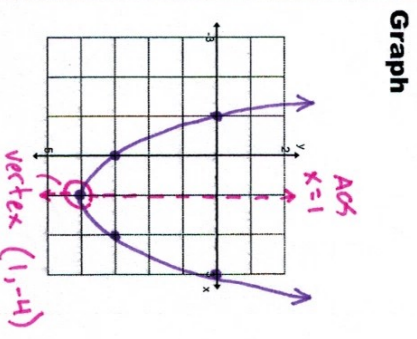
$$y = ax^2 + bx + c$$

# Standard Form

**Axis of Symmetry**  
 $y = \frac{1}{a}x^2 - 2x - 3$   
 $\frac{-b}{2a} = \frac{-(-2)}{2(1)} = \frac{2}{2} = 1$   
 the axis of symmetry is  $x = 1$

**Vertex**  
 $y = x^2 - 2x - 3$   
 sub x-value from AOS  
 $y = (1)^2 - 2(1) - 3$   
 $y = 1 - 2 - 3$   
 $y = -4$   
 vertex @  $(1, -4)$

**Miscellaneous**  
 $y = ax^2 + bx + c$   
 (0, c) y-intercept  
 • FACTOR to go to factored form  
 • COMPLETE THE SQUARE to go to vertex form



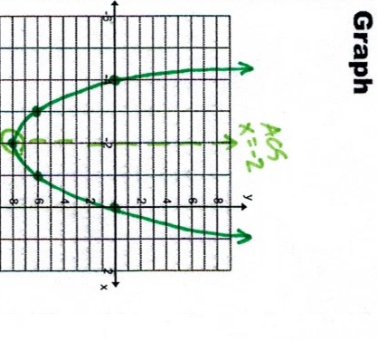
$$y = a(x-h)^2 + k$$

# Vertex Form

**Axis of Symmetry**  
 $y = 2(x+2)^2 - 8$   
 $x = h$  is the AOS  
 the axis of symmetry is  $x = -2$

**Vertex**  
 $y = 2(x+2)^2 - 8$   
 (h, k) is the vertex  
 vertex @  $(-2, -8)$

**Miscellaneous**  
 $y = a(x-h)^2 + k$   
 • SOLVE for y to go to STANDARD form  
 • BEST form to GRAPH and identify TRANSFORMATIONS  
 • SOLVE for x when y=c to find the ROOTS



$$y = a(x-r_1)(x-r_2)$$

# Factored Form

**Axis of Symmetry**  
 $y = -\frac{1}{2}(x-2)(x-6)$   
 $\frac{r_1 + r_2}{2}$  finds the AOS  
 $\frac{2+6}{2} = \frac{8}{2} = 4$   
 the axis of symmetry is  $x = 4$

**Vertex**  
 $y = -\frac{1}{2}(x-2)(x-6)$   
 sub x-value from AOS  
 $y = -\frac{1}{2}(4-2)(4-6)$   
 $y = -\frac{1}{2}(2)(-2)$   
 $y = -\frac{1}{2}(-4)$   
 $y = 2$   
 vertex @  $(4, 2)$

**Miscellaneous**  
 $y = a(x-r_1)(x-r_2)$   
 • SOLVE for y to go to STANDARD form  
 • BEST form for ROOTS  
 • SOLVE for ROOTS by setting y=0 and solve for x using the ZERO PRODUCT PROPERTY  
 $x-2=0$      $x-6=0$   
 $x=2$      $x=6$   
 roots

