

due in  
WORKBOOK p.59

## Topic 2: Quadratic Functions Pre-Engineering Advanced Algebra 2

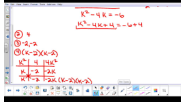
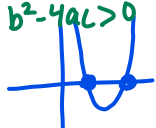
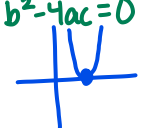

2-1

<p>Vertex form <math>y = a(x-h)^2 + k</math></p> <p>domain <math>(-\infty, \infty)</math></p> <p>ex 3</p>	<p>9/15 (A) or 9/16 (B) Vertex Form</p> <p><u>vertex</u> <math>(h, k)</math></p> <p><math>+a \cup \rightarrow</math> minimum <math>k</math> <math>-a \cap \rightarrow</math> maximum <math>k</math></p> <p><u>vertical stretch/comp</u> <math>a &gt; 1</math>   <math>0 &lt; a &lt; 1</math></p> <p><math>y = a(x-h)^2 + k</math></p> <p>Write eq. given vertex + point ① sub in vertex <math>(h, k)</math>   ③ solve for <math>a</math> ② sub in point <math>(x, y)</math></p>	<p>Assignment 2-1 (Savvas) on Canvas</p>
<p>Properties of Quadratic Functions Standard Form <math>y = ax^2 + bx + c</math></p> <p><math>a &gt; 0</math> parabola opens down <math>a &lt; 0</math> parabola opens up</p> <p><math> a  &gt; 0</math> graph is skinny <math> a  &lt; 0</math> graph is wide</p> <p>If <math>b = 0</math>, then the vertex is on the y-axis. The y-axis is the symmetry line. <math>p = -\frac{b}{2a}</math></p>	<p>9/19 (A) or 9/20 (B) 2-2 Standard Form <math>y = ax^2 + bx + c</math></p> <p><u>Quadratic Regression</u></p> <p>① <math>\boxed{+}</math>   <math>x_1, y_1</math></p> <p><u>vertex</u> <math>(h, k)</math> <math>h = -\frac{b}{2a}</math>   <math>k = f(h)</math></p> <p><math>+a \uparrow</math> <math>-a \downarrow</math></p> <p><u>y-intercept</u> <math>(0, c)</math></p> <p>formub ② <math>y_1 \sim ax_1^2 + bx_1 + c</math></p>	<p>Assignment 2-2 (Savvas) on Canvas</p>
<p><math>72x^2 - 2 = 2(36x^2 - 1)</math> <math>= 2((6x)^2 - (1)^2)</math> <math>= 2(6x+1)(6x-1)</math></p> <p>2-4 <math>a^2 + b^2</math> <math>(a+bi)(a-bi)</math></p>	<p>9/21 (A) or 9/22 (B) 2-3 Day 1 Multiplying/Factoring Review</p> <p><u>Factor out GCF</u></p> <p><u>2 terms</u> <math>a^2 - b^2</math> <math>(a+b)(a-b)</math></p> <p><u>3 terms</u> <math>x^2 - x - 6</math> <math>(x-3)(x+2)</math></p> <p><u>4 terms</u> <math>2x^3 + 4x^2 + x + 2</math> <math>2x^2(x+2) + 1(x+2)</math> <math>(2x^2+1)(x+2)</math></p>	<p>Assignment</p>
<p>Example of Factored Form <math>y = (x-1)(x-3)</math> factor   factor</p> <p>Same as <math>y = x^2 - 4x + 3</math> and <math>y = (x-2)^2 - 1</math></p>	<p>9/23 (A) or 9/26 (B) 2-3 Factored Form/Review</p> <p><u>SOLVE BY FACTOR</u></p> <p>① <math>ax^2 + bx + c = 0</math> ② <math>( \quad )( \quad ) = 0</math> ③ Set each factor = 0</p> <p><math>y = a(x-p)(x-q)</math>   <u>Set factor = 0</u></p> <p><math>x</math>-intercepts</p>	<p>Assignment 2-3/Quiz Review</p>
<p>Quiz</p> <p>?</p>	<p>9/27(A) or 9/28(B) Write an equation given 2 x-intercepts and a point.</p> <p><math>(3, 0)</math> <math>(1, 0)</math>   <math>(1, -8)</math></p> <p><math>y = a(x-p)(x-q)</math></p> <p><math>x</math>   <math>y</math></p> <p>P.77 in notes</p>	<p>Assignment</p>

$$\begin{aligned} -8 &= a(1-3)(1+1) \\ -8 &= -4a \\ 2 &= a \end{aligned}$$

$$y = 2(x-3)(x+1)$$

Replace  $i^2$  with  $-1$

<div><div><math>i^2 = -1</math></div><div><math>i = \sqrt{-1}</math></div></div>	<div>9/29(A) or 9/30(B) 2-4 Complex Numbers and Operations</div> <div><div><u>Adding/Subtracting</u> Combine like terms <math>(6i+3) - (4i-7)</math> <math>= 2i + 10</math> <math>= \boxed{10+2i}</math></div><div><u>Quotients</u> *multiply num. and denom. by complex conjugate of denom. <math>\frac{5}{2-3i} \frac{(2+3i)}{(2+3i)}</math></div></div>	<div>Sum of Squares <math>4x^2 + 49</math> <math>= (2x+7i)(2x-7i)</math></div>	Assignment
<div></div>	<div>10/10(A) or 10/11(B) 2-5 Completing the Square</div> <div><div>1. Write <math>ax^2 + bx = c</math> 2. Make sure <math>a=1</math> *factor out a if <math>a \neq 1</math> 3. Add <math>(\frac{b}{2})^2</math> to both sides 4. Solve with <math>\sqrt{\quad}</math>'s (Enrique's method p.93)</div><div><u>2 real solutions</u> positive <math>= (x-3)^2</math> <u>1 real solution</u> <math>0 = (x-3)^2</math> <u>2 complex solutions</u> negative <math>= (x-3)^2</math></div></div>		Assignment
<div><math>x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}</math>  discriminant <math>b^2 - 4ac</math></div>	<div>10/12(A) or 10/13(B) 2-6 Quadratic Formula</div> <div>*solves a quadratic equation in form <math>ax^2 + bx + c = 0</math></div> <div><div>*Gives roots, x-int's <math>b^2 - 4ac &gt; 0</math>  2 real Solutions</div><div><math>b^2 - 4ac = 0</math>  1 real Solution</div><div><math>b^2 - 4ac &lt; 0</math>  2 Complex Solutions</div></div>		Assignment
	<div>10/14(A) or 10/17(B) 2-7 Linear-Quadratic Systems Solve with substitution *Ex 2 p. 110*</div>	<div>Inequalities *Example 4* p. 111</div>	
	<div>10/18(A) or 10/19(B) Test Review</div>		
	<div>10/20(A) or 10/21(B) Test</div>		

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*\*These assignments a subject to change.\**