Name: KEY Day 8 Algebra I Review Quadratics

Solve the following equations:

1. $x^2 - 8x + 15 = 0$

$(x-5)(x-3)=0$

$x-5=0 \quad x-3=0$

$x=5 \quad x=3$

2. $x^2 = 16$

$x^2-16=0$

$(x-4)(x+4)=0$

$x-4=0 \quad x+4=0$

$x=4 \quad x=-4$

3. $2x^2 - 5 = 0$

$2x^2=5$

$x^2=\frac{5}{2}$

$x=\pm\sqrt{\frac{5}{2}}$

$x=\pm\frac{\sqrt{5}}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}$

$x=\pm\frac{\sqrt{10}}{2}$

4. $2x^2 - 5x - 3 = 0$

$(2x+1)(x-3)=0$

$2x+1=0 \quad x-3=0$

$2x=-1 \quad x=3$

$x=-\frac{1}{2}$

5. $3x^2 - 5x - 2 = 0$

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

$3x+1=0 \quad x-2=0$

$3x=-1 \quad x=2$

$x=-\frac{1}{3}$

6. $x^2 + 4x + 2 = 0$

DNF

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

$x=\frac{-4\pm\sqrt{(4)^2-4(1)(2)}}{2(1)}$

$x=\frac{-4\pm\sqrt{16-8}}{2}=\frac{-4\pm\sqrt{8}}{2}=\frac{-4\pm2\sqrt{2}}{2}=-2\pm\sqrt{2}$

7. Apply the discriminant test to determine the number of real roots, and if real roots exist, solve by use of the quadratic formula.

$9x^2 - 8x + 2 = 0$

discr $\rightarrow b^2-4ac$

$(-8)^2-4(9)(2)=64-72=-8$

Roots are imaginary

8. Same directions as #7

$x^2 + 5x + 10 = 0$

dis $\rightarrow b^2-4ac$

$\rightarrow 5^2-4(1)(10)$

$\rightarrow 25-40=-15$

Roots are imaginary.

Graph the following quadratic equations. Make sure you identify the vertex, x-int., y-int, and the axis of symmetry.

9. $y = 6x^2 + 0x + 0$

$x = \frac{-b}{2a} = \frac{0}{2(6)} = 0$

Vertex $(0, 0)$

$y = 6(0)^2 = 0$

Axis of sym $x = 0$

x-int

$0 = 6x^2$

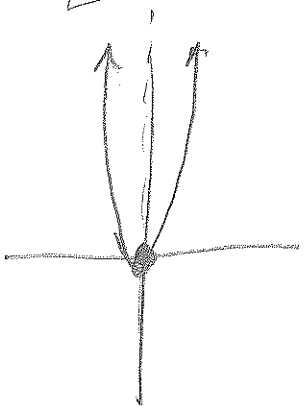
$0 = x^2$

$0 = x$

y-int

$x = 0$

$y = 0$



10. $y = 4x^2 + 2$

$y = 4x^2 + 0x + 2$

Vertex $(0, 2)$

$x = \frac{-0}{2(4)} = 0$

$y = 4(0)^2 + 2$

Axis of Sy $x = 0$

x-int. $0 = 4x^2 + 2$

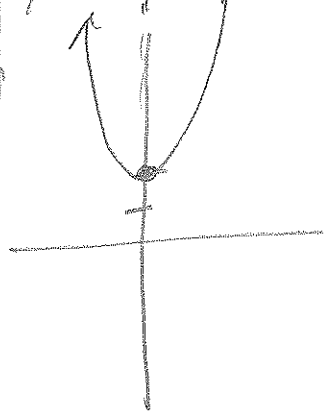
$0 = 4x^2 + 0x + 2$

$x = \frac{-(0) \pm \sqrt{0^2 - 4(4)(2)}}{2(4)}$

$x = \frac{\sqrt{-32}}{8}$

No Real Solutions

y-int = 2



11. $y = x^2 - 6x + 5$

Vertex $= \frac{-(-6)}{2(1)}$

$= \frac{6}{2} = 3$

$(3, -4)$

axis of sym $x = 3$

x	y
3	vertex
	-4
0	5

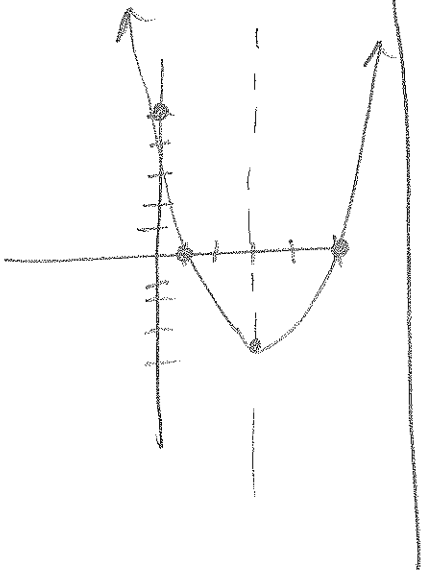
x-int

$0 = x^2 - 6x + 5$

$0 = (x - 5)(x - 1)$

$x = 5 \quad x = 1$

y-int $= (0, 5)$



12. $y = x^2 - 4x + 4$

Vertex $x = \frac{-(-4)}{2(1)} = \frac{4}{2}$

$(2, 0)$

x	y
2	0
	4
	(c

axis of sym $x = 2$

x-int. $0 = x^2 - 4x + 4$

$0 = (x - 2)(x - 2)$

y-int $(0, 4)$