

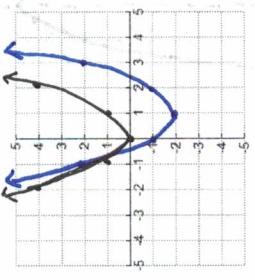
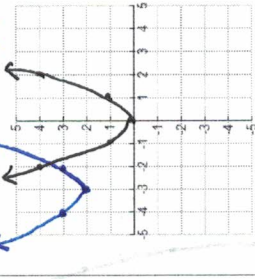
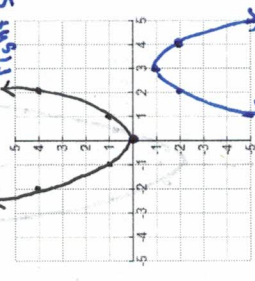
Part I - Multiple-Choice Section: Determine the letter that best answers each question.

- 1.) What is the vertex of the quadratic function $y = -x^2 + 2x + 3$?
 A.) min (1, 4) B.) max (-1, 5) C.) max (1, 5) **D.) max (1, 4)**
- 2.) What is the vertex form of the quadratic function $y = 3x^2 + 12x + 9$?
A.) $y = 3(x+2)^2 - 3$ B.) $y = 2(x+2)^2 + 3$ C.) $y = 3(x-2)^2 + 3$ D.) $y = 3(x+3)^2 - 2$
- 3.) Which piece of information is FALSE for the quadratic function $y = (x+3)^2 + 1$?
 A.) vertex = (-3, 1) B.) aos: $x = -3$ **C.) y-int = (0, 1)** D.) zeros = $-3 \pm i$
- 4.) Which piece of information is TRUE for the quadratic function $y = 2x^2 + 3x - 2$?
 A.) vertex = (-0.25, -3.125) B.) aos: $x = -0.25$ C.) y-int = (0, 2) **D.) zeros = -2, 1/2**

For problems 5 - 10: The function $h(t) = -16t^2 + 64t + 18$ represents the path of a ball tossed in the air where h is the ball's height in feet and t is time in seconds.

- 5.) At what time does the ball reach its maximum height?
 A.) 1.5 seconds B.) 2 seconds C.) 2.5 seconds D.) 3 seconds **B**
- 6.) What is the maximum height of the ball?
 A.) 66 feet B.) 78 feet C.) 82 feet D.) 94 feet **C**
- 7.) When does the ball reach the ground?
 A.) about 0.3 secs B.) about 2 secs C.) about 4.3 secs D.) about 3.3 secs **C**
- 8.) A rocket sled is propelled into a target and given by the formula $d = 1.5t^2 + 120$, where t is the number of seconds after the rocket ignition and d is the sled's distance from target?
 How many seconds have passed since ignition when the sled is 230 meters from the target?
 A.) about 8.6 secs B.) about 7.7 secs C.) about 6.3 secs D.) about 5.4 secs **A**
- 9.) A rectangular photograph is 8 cm wide and 12 cm long. The photograph is enlarged by increasing the same length and width by an equal amount in order to double its area.
 What are the dimensions of the new photograph?
 A.) 48 cm by 4 cm B.) 32 cm by 6 cm C.) 24 cm by 8 cm D.) 16 cm by 12 cm **D**
- 10.) A baseball player hits a high pop-up modeled by the function $h(t) = -3t^2 + 18t - 15$ where $h(t)$ is the height of the ball in meters after t seconds. How long does a player on the opposing team have to catch the ball if he catches it 9 meters above the ground?
 A.) b/w 1 and 2 secs B.) b/w 2 and 4 secs C.) b/w 3 and 5 secs D.) b/w 4 and 5 secs **B**

Part II. Do the following - a.) Draw in the original quadratic parent graph. b.) State all the transformations in the given function. c.) Graph the given function based on its transformations. d.) State the domain and range of graphed/transformed function only using interval notation.

Problem # 11	Problem # 12	Problem # 13
Given Function: $y = (x-1)^2 - 2$ Transformations: <u>Right 1, down 2</u> 	Given Function: $y = (x+3)^2 + 2$ Transformations: <u>Left 3, up 2</u> 	Given Function: $y = -(x-3)^2 - 1$ Transformations: <u>Reflects x-axis, Right 3, down 1</u> 
Domain (of given funct): <u>$(-\infty, \infty)$</u> Range (of given funct): <u>$[-2, \infty)$</u>	Domain (of given funct): <u>$(-\infty, \infty)$</u> Range (of given funct): <u>$[2, \infty)$</u>	Domain (of given funct): <u>$(-\infty, \infty)$</u> Range (of given funct): <u>$(-\infty, -1]$</u>

Part III - Short Answer Section: Complete each problem and its parts. Must show work for credit!

14.) Solve by FACTORING: a.) $x^2 + 5x - 15 = 3 + 2x$ <u>$\{-6, 3\}$</u> b.) $6x^2 + 7x = 5$ <u>$\{-5/3, 1/2\}$</u>	15.) Solve by COMPLETING THE SQUARE: a.) $x^2 + 10x + 7 = -10$ <u>$\{-5 \pm 2\sqrt{2}\}$</u> b.) $2x^2 - 4x + 42 = 0$ <u>$\{1 \pm 2i\sqrt{5}\}$</u>
16.) Solve by SQUARE ROOT PROPERTY: a.) $(x+2)^2 - 3 = 6$ <u>$\{-5, 1\}$</u> b.) $3x^2 - 4 = -16$ <u>$\{\pm 2i\}$</u>	17.) Solve by QUADRATIC FORMULA: a.) $2x^2 - 2x - 1 = 0$ <u>$\{1 \pm \sqrt{3}\}$</u> b.) $x^2 + x + 6 = 4$ <u>$\{-1 \pm \sqrt{5}\}$</u>
18.) Solve by YOUR METHOD OF CHOICE: a.) $4x^2 + 9x - 9 = 0$ <u>$\{-3, 3/4\}$</u> b.) $x^2 + 4x - 5 = -3$ <u>$\{-2 \pm \sqrt{6}\}$</u> c.) $3x^2 + 16 = 11 - x^2$ <u>$\{\frac{\pm i\sqrt{5}}{2}\}$</u> d.) $-2x^2 + 6x + 2 = 4$ <u>$\{\frac{3 \pm \sqrt{5}}{2}\}$</u>	

19.) Simplify each expression that contain "i". Put in standard form of $a+bi$:

a.) $2(3+2i) - 3(1-5i)$

$3+9i$

b.) $(5+3i)(2-4i)$

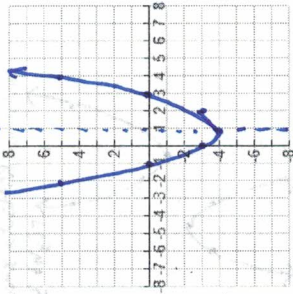
$22-14i$

c.) $\frac{6i}{1-i}$

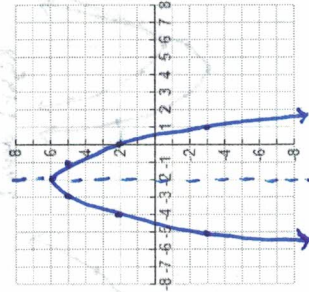
$-3+3i$

20.) Graph each quadratic function accurately:

a.) $y = x^2 - 2x - 3$



b.) $y = -(x+2)^2 + 6$



21.) Using the given information, write each quadratic function in standard form:

a.) Has vertex of $(3, -4)$ and goes through point $(5, 4)$.

$y = 2x^2 - 12x + 14$

b.) Has zeros of -5 and $\frac{3}{4}$ and the value of $a = -1$

$y = -4x^2 - 17x + 15$