Algebra 1 Support Unit 5: Graphs and Characteristics of Quadratic Functions Practice

Day 8 – Different Forms of Quadratics
Practice Assignment

Name: Key
Date: _____ **Block:** _____

Review – Find the average rate of change for the equation $y = 2x^2 + 4x - 7$ on the interval $-1 \le x \le 2$.

$x = -1$ $y = 2(-1)^2 + 4(-1) - 7$
$y = 2 - 4 - 7 = -9$

$x = 2$ $y = 2(2)^2 + 4(2) - 7$
$y = 8 + 8 - 7 = 9$

$(-1, -9)$ $(2, 9)$

$m = \frac{9 + +9}{2 - +1} = \frac{18}{3} = \boxed{6}$

Directions: For the table below, identify each characteristic that can be EASILY determined from looking at the equation (requires no calculations). You will not fill in answers for every box.

Equation	Graph Opens	Vertex	X-Intercepts	Y-Intercept
1. $y = (x + 4)^2 - 5$ vertex	up	$(-4, -5)$		$(0, 11)$
2. $y = -2(x + 3)(x - 2)$ factored	down		$(-3, 0)$ $(2, 0)$	
3. $y = -x^2 + 3$ vertex/standard	down	$(0, 3)$		$(0, 3)$
4. $y = x^2 + 5x - 14$ standard	up		$(-7, 0)$ $(2, 0)$	$(0, -14)$
5. $y = -(x + 1)^2$ vertex/factored	down	$(-1, 0)$	$(-1, 0)$	
6. $y = (x - 7)(x + 5)$ factored	up		$(7, 0)$ $(-5, 0)$	$(0, -35)$
7. $y = x^2 + 8x + 12$ standard	up	$(-4, -4)$		$(0, 12)$
8. $y = -2(x - 3)^2 + 1$ vertex	down	$(3, 1)$		

Convert the following equations to the specific form and give the additional characteristics you can determine from the new form.

Equation 1 to standard:

$y = (x+4)^2 - 5$
$y = (x+4)(x+4) - 5$
$y = x^2 + 4x + 4x + 16 - 5$
$\boxed{y = x^2 + 8x + 11}$
y-int $(0, 11)$

Equation 4 to factor ed:

$y = x^2 + 5x - 14$
5, 7, −2, −14
$\boxed{y = (x+7)(x-2)}$
x-int $(-7, 0)$ $(2, 0)$

Equation 6 to standard:

$y = (x-7)(x+5)$
$y = x^2 + 5x - 7x - 35$
$\boxed{y = x^2 - 2x - 35}$
y-int $(0, -35)$

Equation 7 to vertex:

$y = x^2 + 8x + 12$
$x = \frac{-8}{2(1)} = \frac{-8}{2} = -4$
$y = (-4)^2 + 8(-4) + 12$
$y = -4$
vertex: $(-4, -4)$
$\boxed{y = (x+4)^2 - 4}$

Review: Identify the form each quadratic equation is in. Then graph the equations.

9. Graph $y = (x - 4)(x + 2)$

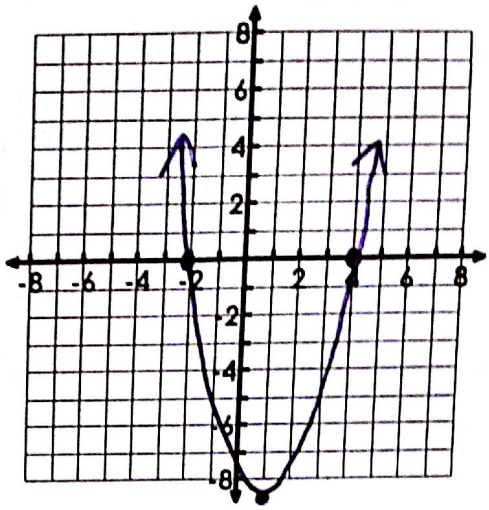
Form: factored

x-int (4,0) (-2,0) vertex (1,-9)

$x = \frac{4 + -2}{2} = \frac{2}{2} = 1$

$y = (1-4)(1+2)$

$y = -9$



10. Graph $y = x^2 + 4x - 5$

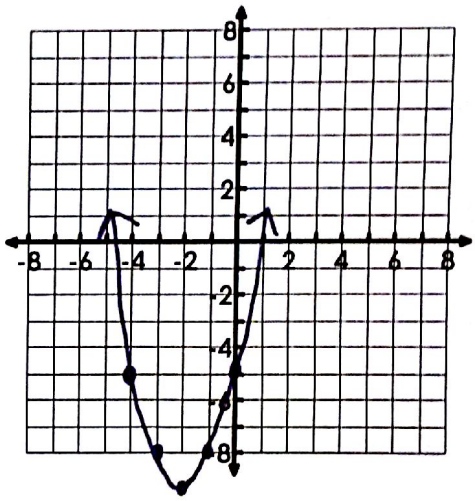
Form: Standard

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

$y = (-2)^2 + 4(-2) - 5$

$y = -9$

x	-4	-3	-2	-1	0
y	-5	-8	-9	-8	-5



11. Graph $y = -2(x + 3)^2 - 2$

Form: vertex

x	-5	-4	-3	-2	-1
y	-10	-4	-2	-4	-10