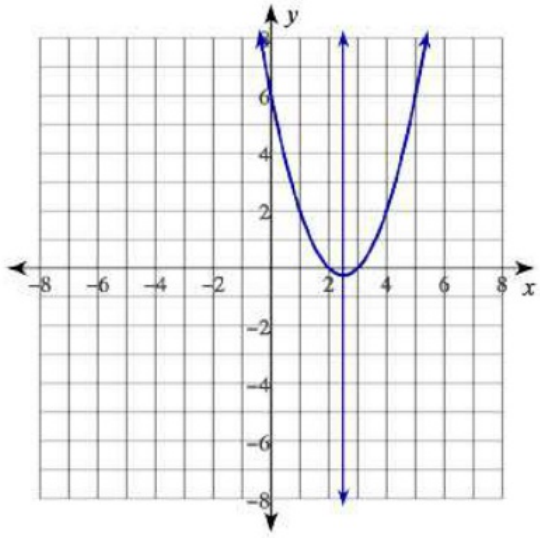
Name _____ Period _____

Graphing Quadratics Unit Day 2 – In Class Notes – Key Features from All 3 Forms

– NO CALCULATOR! –

Below is the quadratic equation from the warm up today. (Remember: It's one quadratic equation written 3 different ways!) Next to each set of equations is the graph that belongs to them. Identify the vertex, axis of symmetry, direction of opening, whether the graph has a minimum or a maximum , y-intercept, x-intercept(s), domain, range, intervals where the graph is increasing and decreasing of each.

1. standard: $y = x^2 - 5x + 6$ factored: $y = (x-2)(x-3)$ vertex: $y = (x - \frac{5}{2})^2 - \frac{1}{4}$



Vertex: $(\frac{5}{2}, \frac{-1}{4})$

Axis of Symmetry: $x = \frac{5}{2}$

Opens: up / down (circle one)

Maximum / Minimum (circle one) $y = \frac{-1}{4}$

Y-Intercept: $(0, 6)$

X-Intercept(s): none / Imaginary

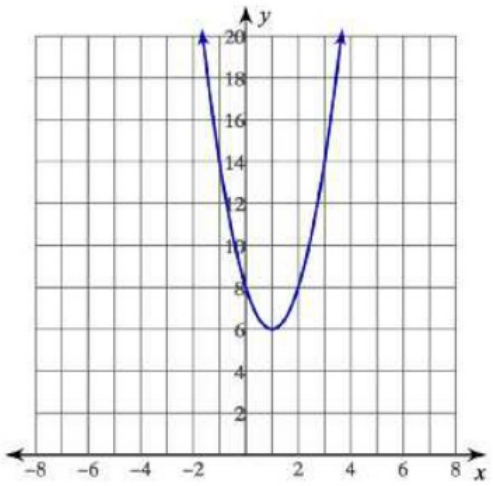
Domain: $(-\infty, \infty)$

Range: $(\frac{-1}{4}, \infty)$

Increasing: $(\frac{5}{2}, \infty)$

Decreasing: $(-\infty, \frac{5}{2})$

2. standard: $y = 2x^2 - 4x + 8$ factored: prime vertex: $y = 2(x-1)^2 + 6$



Vertex: $(1, 6)$

Axis of Symmetry: $x = 1$

Opens: up / down (circle one)

Maximum / Minimum (circle one) $y = 6$

Y-Intercept: $(0, 8)$

X-Intercept(s): none / Imag.

Domain: $(-\infty, \infty)$

Range: $(6, \infty)$

Increasing: $(1, \infty)$

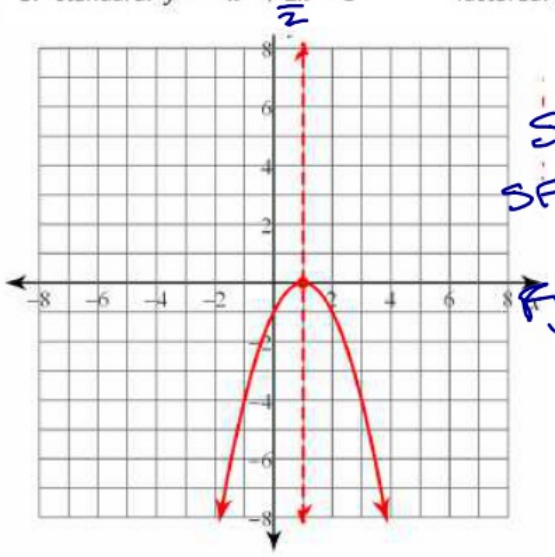
Decreasing: $(-\infty, 1)$

Name _____ Period _____

Graphing Quadratics Unit Day 2 – In Class Notes – Key Features from All 3 Forms

– NO CALCULATOR! –

3. standard: $y = -x^2 + 2x - 1$ factored: $y = -(x-1)^2$ vertex: $y = -(x-1)^2 + 0$



V Vertex: $(1, 0)$

S, V Axis of Symmetry: $x = 1$ $AOS = \frac{-b}{2a}$

SFV Opens: up / down (circle one) a-up -a-down

V Maximum / Minimum (circle one) $y = 0$

F, S Y-Intercept: $(0, -1)$

F X-Intercept(s): $(0, 0)$

All Domain: $(-\infty, \infty)$

V Range: $(-\infty, 0]$

V Increasing: $(-\infty, 1)$

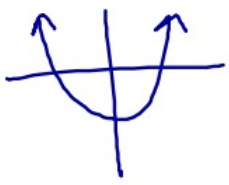
V Decreasing: $(1, \infty)$

4. Now go back and mark each piece of information with F, V, or S (or more than one) F if that key feature can be found from Factored form. V if that key feature can be found from Vertex form. S if that key feature can be found from Standard form.

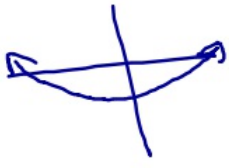
5. Is there anything in any of the equations that may indicate the steepness of the graph?

$y = ax^2 + bx + c$ $y = a(x-m)(x-n)$ $y = a(x-h)^2 + k$

If $a = 1$



If $0 < a < 1$



If $a > 1$

Graphing Quadratics Unit Day 2 - IN CLASS NOTES Name_____ ID: 1

Key Features from ALL 3 Forms

Date_____ Period____

For each problem below, Identify which form the quadratic is in. Then find all Key Features that can be found from that particular form, with out doing any convertions. Some could be more than one form.

1) $y = -2(x-5)^2 + 0$

Vertex: (5,0)
AOS: $x = 1$
down: $a = \downarrow -2$
max $y = 0$
y int:
x int:
Domain: $(-\infty, \infty)$
Range: $(-\infty, 0)$
Inc.: $(-\infty, 5)$
Dec: $(5, \infty)$

2) $y = -7(x+10)^2 + 7$

3) $y = -3(x+7)(x+3)$

$-7 \downarrow -3$

AOS: -5

Vertex (Plug in): $(-5, \ )$

down: $a = \downarrow -3$

4) $y = -x^2 + 14x - 39$

AOS: $\frac{-b}{2a} = \frac{-14}{2(-1)} = \frac{-14}{-2} = 7$ $x = 7$

Vertex (Plug in): $(7, \ )$

down: $a = \downarrow 1$

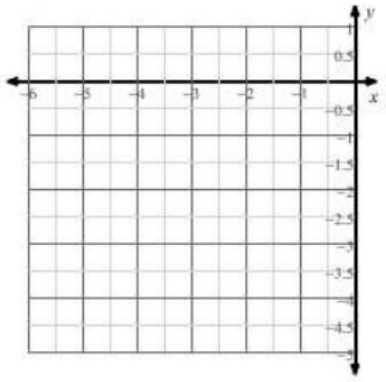
y int: $(0, -39)$

5) $y = -x^2 + 3$

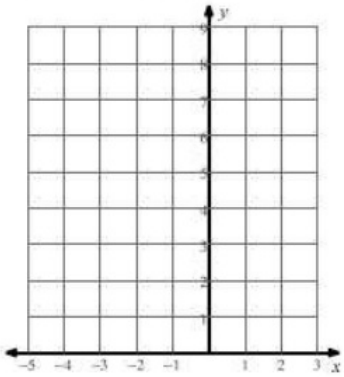
6) $y = x^2$

Sketch the graph of each function. Remember you must have at least 5 exact points, and to find certain key features you may need to convert the quadratic equation to another form. Then list domain, range, intervals of increasing and decreasing.

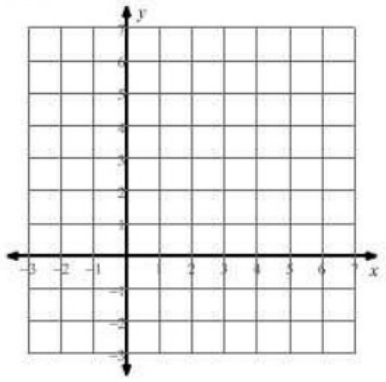
7) $y = x^2 + 6x + 5$



8) $y = x^2 + 4x + 8$



9) $y = 2x^2 - 8x + 6$



10) $y = -x^2 + 2x$