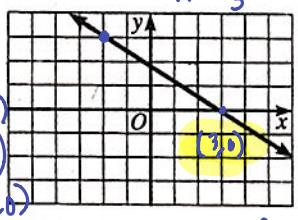
Do Now #s 1,3 and 5

Name: _____ Date: _____

PC: Homework Writing Equations of Lines Ms. Loughran

Write the equation of the line from graph and also write domain and range. Find x and y-intercepts. Determine whether or not each is a function.

1.



$m = -\frac{3}{5}$

$y - y_1 = m(x - x_1)$

$y - 0 = -\frac{3}{5}(x - 3)$

$y = -\frac{3}{5}x + \frac{9}{5}$

Function

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

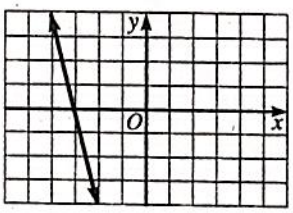
R: $(-\infty, \infty)$

x-int: $(3, 0)$

y-int: $(0, \frac{9}{5})$

* To find a y-intercept algebraically let $x = 0$.

2.



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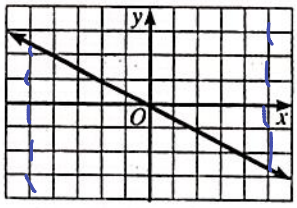


Function

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

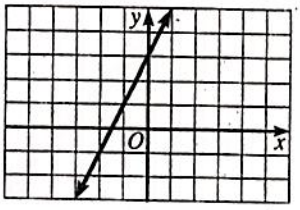
R: $(-\infty, \infty)$

x-int: $(0, 0)$

y-int: $(0, 0)$

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

4.



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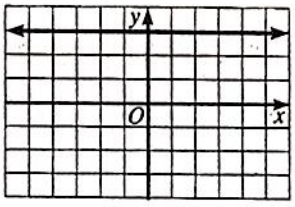


Function

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

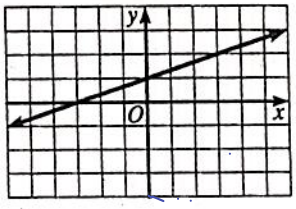
R: $\{3\}$

x-int: none

y-int: $(0, 3)$

$y = 3$

6.



Name:_____ Date:_____

PC: Quadratic Functions Ms. Loughran

Standard form: $y = f(x) = ax^2 + bx + c$, $a \neq 0$

- If $a > 0$, then the parabola opens upward; if $a < 0$, then the parabola opens downward.
- The vertex of the parabola is the point $\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$, and the axis of symmetry is $x = \frac{-b}{2a}$.
- To find the y-intercept, *let* $x = 0$ and solve for y.
- To find the x-intercept, let $y = 0$ and solve for x. (This will result in a quadratic equation which might have 0, 1 or 2 solutions.)

Vertex form: $y = f(x) = a(x-h)^2 + k$, $a \neq 0$

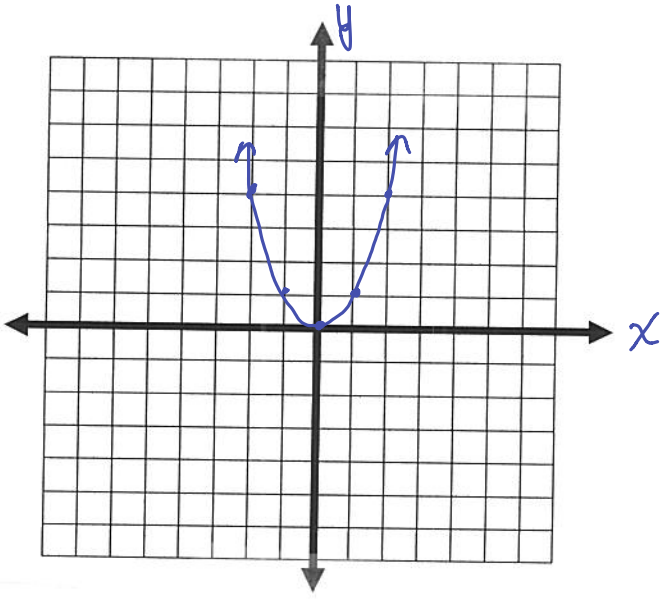
- If $a > 0$, then the parabola opens upward; if $a < 0$, then the parabola opens downward.
- The vertex of the parabola is the point (h, k) and $x = h$ is the axis of symmetry.
- To find the y-intercept, let $x = 0$ and solve for y.
- To find the x-intercept, let $y = 0$ and solve for x. (This will result in a quadratic equation which might have 0, 1 or 2 solutions.)

General Graph for $y = x^2$

Axis of sym: $x = \frac{-b}{2a} = \frac{-0}{2(1)} = 0$

Vertex: $(0, 0)$

x	y
-2	4
-1	1
0	0
1	1
2	4



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

Range: $[0, \infty)$

x-int: $(0, 0)$

y-int: $(0, 0)$

Examples:

1. Given the quadratic function $f(x) = -x^2 + 6x - 5$, find the axis of symmetry, vertex, x- and y-intercepts and graph it.

ax^2+bx+c

$x = \frac{-b}{2a} = \frac{-6}{2(-1)} = 3$

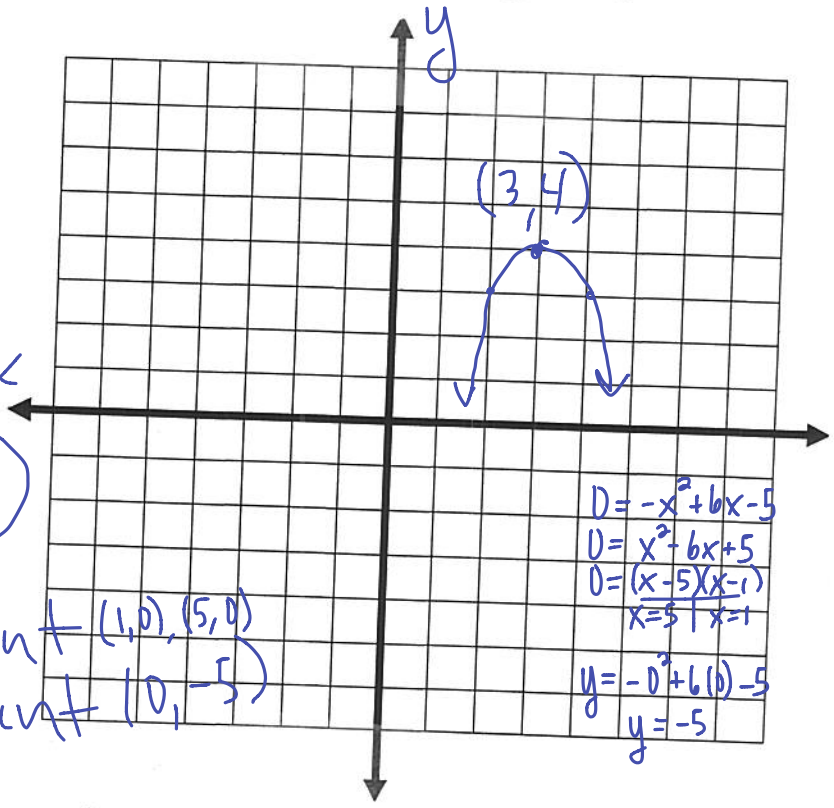
Vertex: $(3, -3^2+6(3)-5)$

$(3, 4)$

x	y
2	$-2^2+6(2)-5=3$
3	4
4	3

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

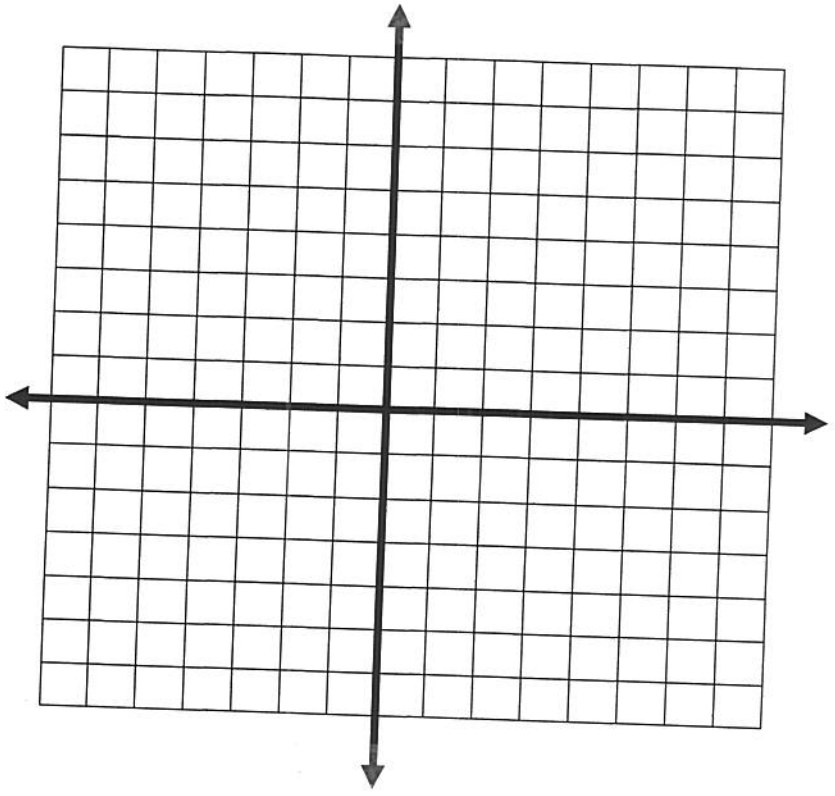
$R: (-\infty, 4]$



x-int $(1,0), (5,0)$

y-int $(0,-5)$

2. Given the quadratic function $f(x) = (x-4)^2$, find the axis of symmetry, vertex, x- and y-intercepts and graph it.



How does the graph in question 2 compare to the general graph of $y = x^2$?