

Name: Key

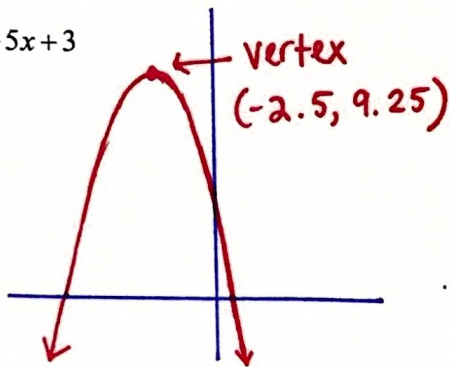
Period: _____

Checkpoint 5C

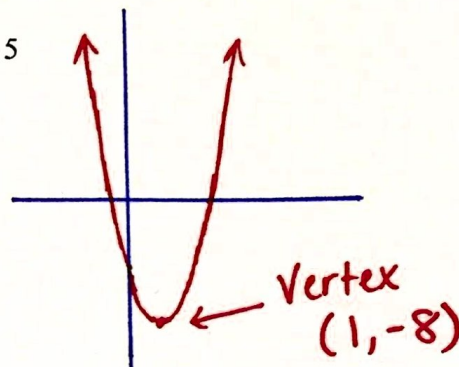
Integrated Math 2

Sketch the parabola represented by the equation. Determine the vertex and label it on your sketch.

1) $f(x) = -x^2 - 5x + 3$

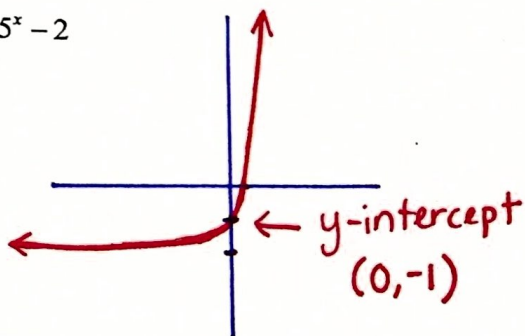


2) $h(x) = 3x^2 - 6x - 5$

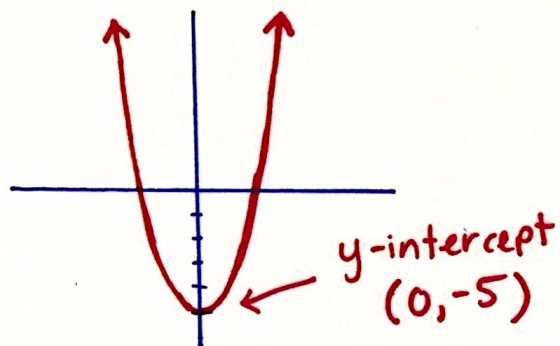


Sketch the graph (or plot the points and connect them with a curve). Determine the y-intercept and label it on your sketch.

3) $v(x) = 5^x - 2$

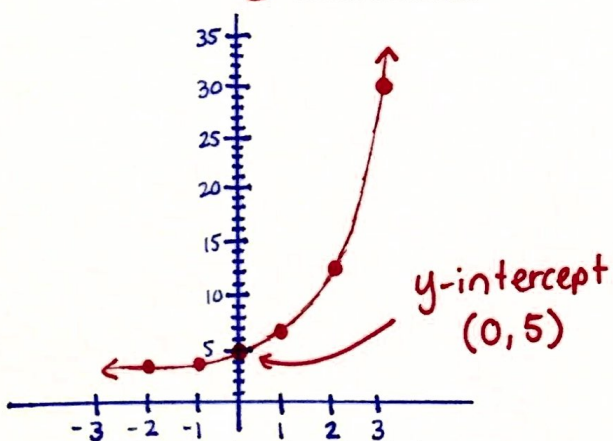


4) $n(x) = 2x^2 - 5$



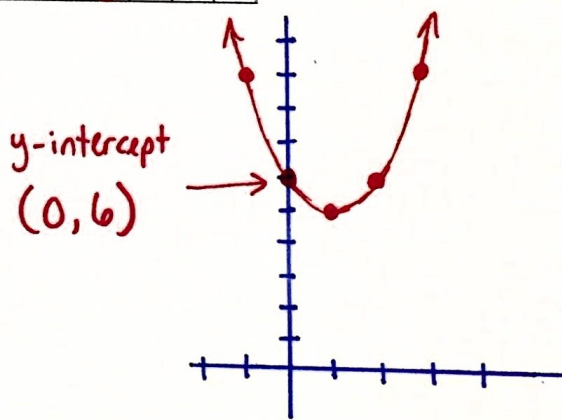
5)

-2	-1	0	1	2	3
4.1	4.3	5	7	13	31



6)

-1	0	1	2	3
9	6	5	6	9



Given the input values (x values), determine the output values (y values). For the tables, fill in the y values accordingly.

7) $f(x) = -4x - 30$; $x = -2$

$$f(-2) = -4(-2) - 30$$

$$= 8 - 30$$

$$= \boxed{-22}$$

8) $g(x) = 2^{x-4}$; $x = 2$

$$g(2) = 2^{2-4}$$

$$= 2^{-2}$$

$$= \boxed{\frac{1}{4}}$$

9) $h(x) = x^2 - 3x + 18$; $x = -7$

$$h(-7) = (-7)^2 - 3(-7) + 18$$

$$= 49 + 21 + 18$$

$$= \boxed{88}$$

10) $m(x) = -4(x-1)(x+2)$

	-2	-1	0	1	2
	0	8	8	0	-16

$$\begin{aligned}
 m(0) &= -4(0-1)(0+2) \\
 &= -4(-1)(2) \\
 &= 4(2) \\
 &= \boxed{8}
 \end{aligned}$$

$$\begin{aligned}
 m(2) &= -4(2-1)(2+2) \\
 &= -4(1)(4) \\
 &= \boxed{-16}
 \end{aligned}$$

11) $n(x) = 5^x$

	-2	-1	0	1	2
	-0.04	0.2	1	5	25

$$\begin{aligned}
 n(-1) &= 5^{-1} \\
 &= \boxed{\frac{1}{5} \text{ or } 0.2}
 \end{aligned}$$

$$\begin{aligned}
 n(2) &= 5^2 \\
 &= \boxed{25}
 \end{aligned}$$

12) Three vehicles leave a starting location at the same time. Each vehicle has an equation that represents the distance traveled where t is time in minutes and d is distance in miles.

- Fill in the chart with the range of distance (in miles) for the given interval of time (in minutes).
- Will the vehicles have traveled the same distance at any point of time? Explain why or why not.
- Over a long period of time, which vehicle travels the farthest? Which travels the shortest?

Vehicle	Equation for Distance (d = miles; t = minutes)
A	$d = 1.75t^2 - 1$
B	$d = 0.25t^2$
C	$d = 1.5t$

Time Interval (minutes)	Vehicle A	Vehicle B	Vehicle C
	Range of Distances (miles)	Range of Distances (miles)	Range of Distances (miles)
$0 \leq t \leq 1$	$(0, 0.75)$	$(0, 0.25)$	$(0, 1.5)$
$1 \leq t \leq 2$	$(0.75, 2.06)$	$(0.25, 1)$	$(1.5, 3)$
$2 \leq t \leq 3$	$(2.06, 4.36)$	$(1, 2.25)$	$(3, 4.5)$
$3 \leq t \leq 4$	$(4.36, 8.38)$	$(2.25, 4)$	$(4.5, 6)$

b. No, there is no point at which the vehicles will have traveled the same distance. The end of each range interval tells us how far each vehicle has traveled by the specified time.

c. Over a long period of time, Vehicle A will travel the farthest because it has the greatest average rate of change. Vehicle B will travel the shortest distance because it has the smallest rate of change.