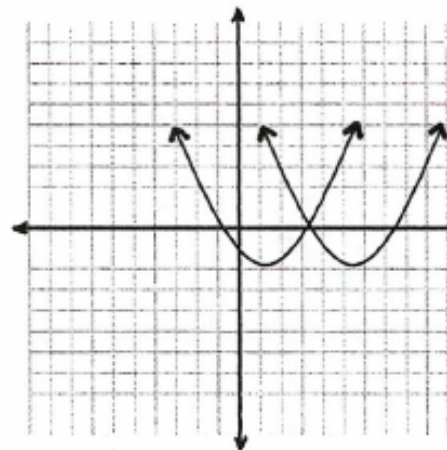


Math 11

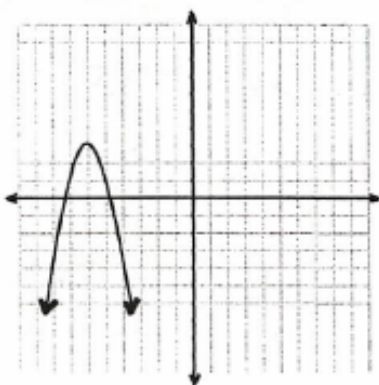
Quadratics #2 – Review #2

SOLUTIONS

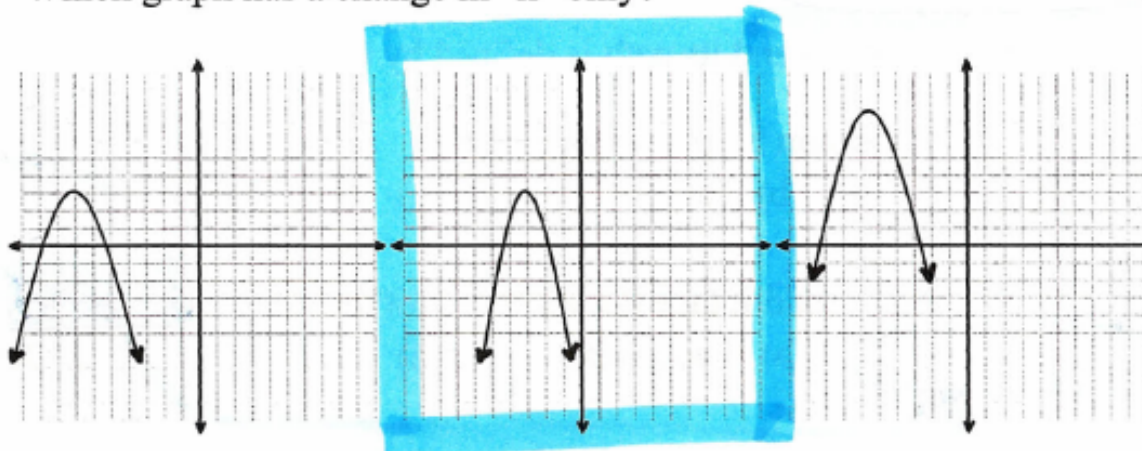
1. What is different about these two graphs?
- a) Domain
 - b) Range
 - c) Axis of Symmetry
 - d) Stretch Factor



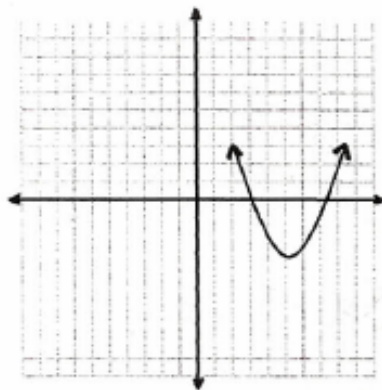
2. $y = a(x - h)^2 + k$



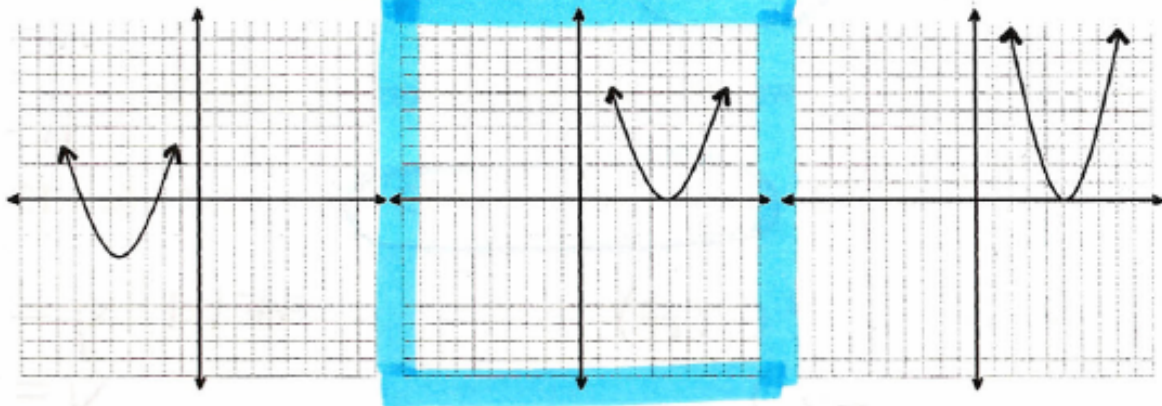
Which graph has a change in "h" only?



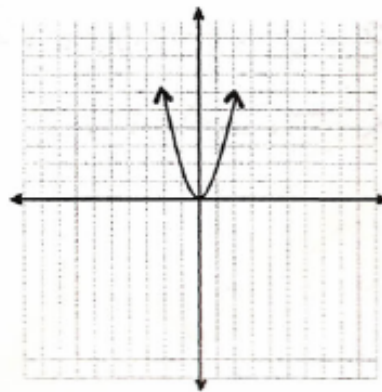
3. $y = a(x - h)^2 + k$



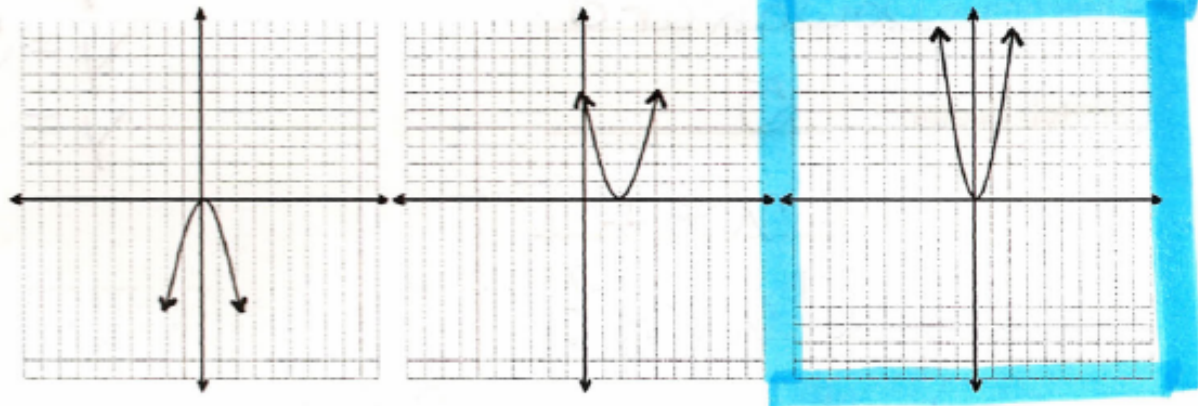
Which graph has a change in "k" only?



4. $y = a(x - h)^2 + k$



Which graph has a change in "a" only?



*** Use the following equation for questions (5 - 7): $\frac{1}{2}(y - 3) = (x + 4)^2$

5. The "3" moves the graph:

- a) up/down b) left/right c) and stretches it d) and reflects it in the x-axis

6. The "4" moves the graph:

- a) up/down b) left/right c) and stretches it d) and reflects it in the x-axis

7. The " $\frac{1}{2}$ ":

- a) moves the graph up/down b) moves the graph sideways c) stretches the graph d) flips the graph

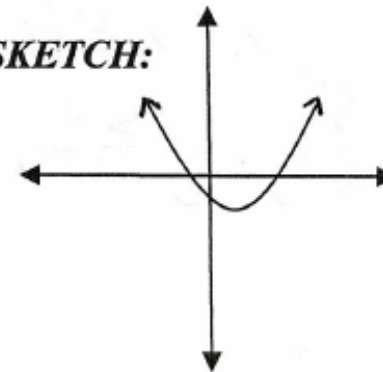
8. The parabola shown in the diagram has its x-intercepts at (-3, 0) and (11, 0). Which one of the following "could" be the vertex:

- a) (4, -5) b) (14, -3)
c) (8, -2) d) (7, 4)

Average of x-values :

$$\frac{-3 + 11}{2} = \frac{8}{2} = (4, ?)$$

SKETCH:



9. A ball is kicked and its graph is defined by $-\frac{1}{5}(y-20) = (x-6)^2$. What is the maximum height?
How long does it take to reach the maximum height?

- a) 20 m 6 s b) 5 m 6 s c) 20 m 5 s d) 6 m 20 s

Vertex: $(6, 20)$
 \downarrow \rightarrow H
 Height Time

10. Which of the following equations could be used to find the area, if you had 200 m of material to construct a fence around the following area?

- a) $y = (200 - x)(x)$ b) $y = (100 - 2x)(x)$
 c) $y = (200 - 2x)(x)$ d) $y = (100 - x)(2x)$

$P = 200m$
 Let $x = \text{width}$
 $200 - 2x = \text{length}$
 $A = l \times w$
 $A = (200 - 2x)(x)$

*** A rocket is launched and its path is defined by $h = -4t^2 + 40t$. Use this equation to answer (11-13)

11. What is the maximum height of the rocket?

- a) 40 m b) 160 m c) 10 m d) 100m

$h = -4t^2 + 40t$
 $h = -4(t^2 - 10t)$
 $h - 100 = -4(t^2 - 10t + 25)$
 $h - 100 = -4(t - 5)^2$
 $h = -4(t - 5)^2 + 100$

12. How much time would it take the rocket to hit the ground?

- a) 10 seconds b) 5 seconds c) 4 seconds d) 20 seconds

5 x 2

* Vertex $(5, 100)$

13. How high would the rocket be after 3 seconds?

- a) 40 m b) 84 m c) 156 m d) 100 m

$h = -4(3)^2 + 40(3)$
 $h = -4(9) + 120$
 $h = -36 + 120$
 $h = 84m$

Time to Max. reach Height
 Max. height

14. If $y = 3(x - 2)^2 + 1$ was placed in general form, it would be:

- a) $y = 3x^2 - 6x + 3$ b) $y = 3x^2 - 12x + 13$ c) $y = 3x^2 - 6x + 13$ d) $y = 3x^2 - 6x + 3$

$$\begin{aligned}y &= 3(x-2)^2 + 1 \\y &= 3(x-2)(x-2) + 1 \\y &= (3x-6)(x-2) + 1 \\y &= 3x^2 - 6x - 6x + 12 + 1 \\y &= 3x^2 - 12x + 13\end{aligned}$$

15. $-\frac{1}{5}(y+2) = (x-1)^2$ (TF)

Vertex (1, -2)

Direction Downward

Stretch Factor 5

Axis of Symmetry $x=1$

Domain $\{x | x \in \mathbb{R}\}$

Range $\{y | y \leq -2, y \in \mathbb{R}\}$

16. $3(y-2) = x^2 \Rightarrow 3(y-2) = (x-0)^2$ (TF)

Vertex (0, 2)

Direction Upward

Stretch Factor $\frac{1}{3}$

Axis of Symmetry $x=0$

Domain $\{x | x \in \mathbb{R}\}$

Range $\{y | y \geq 2, y \in \mathbb{R}\}$