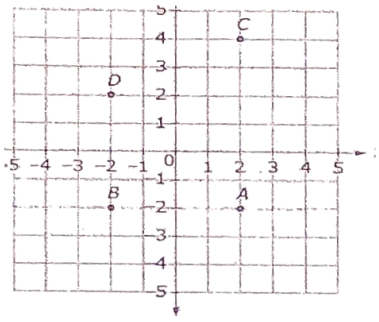
## *Review:*

*Domain:* ***DIXI: Domain, input values, x-values, independent variable***

*Range:* ***ROYD: Range, output values, y-values, dependent variable***

***Find the domain and range of the following:***




***2.***

| x | y |
|---|---|
| -2 | 3 |
| 0 | 5 |
| 0 | -16 |

***3.*** ( 0, 7) ( 1, 5) ( 8, - 18) (3, 7)

## *Quadratic Functions*:

A) ***Domain*** refers to all the ***x*** values and domain is read from ***left to right***.

In a quadratic graph with arrows on both ends, the domain will always be:

All reals or can be written as:

$(-\infty, \infty)$ or $-\infty < x < \infty$

B) ***Range*** is all the ***y*** values and range is read from ***bottom to top***.

In a quadratic graph with arrows on both ends;

Quadratic graphs that are ***frowning*** (upside down u) the range will always begin with negative infinity and end with a number: ***$(-\infty$, k-value]*** ***or*** $y \leq k$ value

Quadratic graphs that are ***smiling*** (regular u), the range will always begin with a number and end with positive infinity: [k value , $\infty$) or $y \geq$ k value

***End Behavior***: A written description of what direction the ends of the graph are moving: (always written as two sentences): As $x \to -\infty$, $y \to$ _____

As $x \to \infty$, $y \to$ _____

In a ***quadratic*** graph that is ***smiling***: As $x \to -\infty$, $y \to \infty$

As $x \to \infty$, $y \to \infty$

In a ***quadratic*** graph that is ***frowning***: As $x \to -\infty$, $y \to -\infty$

As $x \to \infty$, $y \to -\infty$

So, if the arrow points up, then it is rising which means it is approaching $\infty$

So, if the arrow points down, then it is falling which means it is approaching $-\infty$

***Example 1:*** $y = 3(x-2)^2 - 4$

a = ___ h = _____ k = ___

Opens: up or down

Vertex: _____

Max or Min: _____

Axis of symmetry: _____

X-Intercept: _____

Y – Intercept: _____

Rate of Change from x = 2 to x = 4

Domain: _____

Range: _____

End behavior : As $x \to -\infty$, $y \to$

$x \to \infty$, $y \to$

| x | y |
|---|---|
| | |
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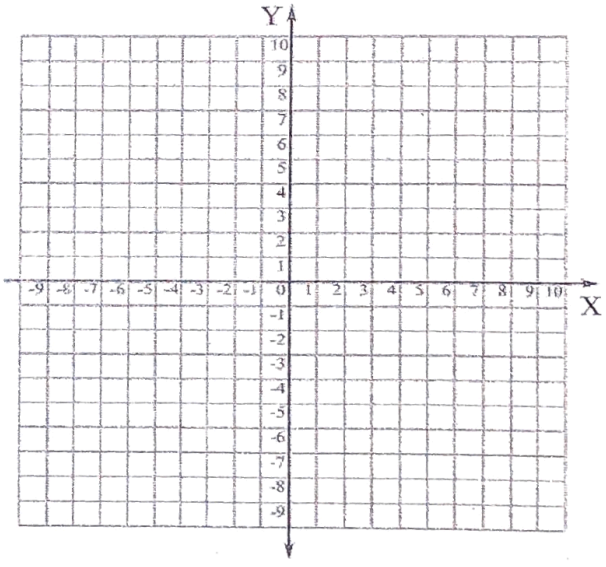

***Example 2:*** $f(x) = -(x+1)^2 + 4$

a = ___ h = _____ k = ___

Opens: up or down

Vertex: _____

Max or Min: _____

Axis of symmetry: _____

X-Intercept: _____

Y – Intercept: _____

Rate of Change from x = -3 to x = -2

Domain: _____

Range: _____

End behavior : As x → - ∞, y →

x → ∞, y →

| x | y |
|---|---|
| | |
| | |
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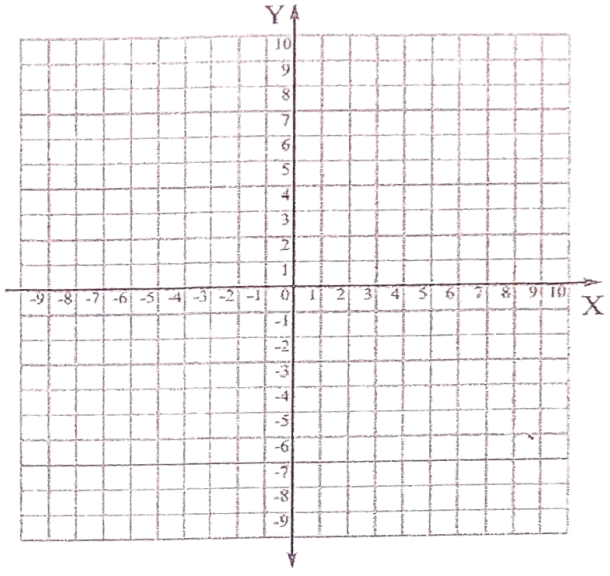
| | |
| | |
| | |




***Example 3:*** $y = (x-4)^2$

a = ___ h = _____ k = ___

Opens: up or down

Vertex: _____

Max or Min: _____

Axis of symmetry: _____

X-Intercept: _____

Y – Intercept: _____

Rate of Change from x = 5 to x = 6

Domain: _____

Range: _____

End behavior : As x → - ∞, y →

x → ∞, y →

| x | y |
|---|---|
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