

Name _____

Graph. Identify domain, range, vertex, axis of symmetry, zeros, direction of opening, y-intercepts, extrema, intervals of increase, intervals of decrease, and end behavior, *rate of change*.

1. $y = (x+1)^2 + 2$ opens: _____
 $a =$ _____ $h =$ _____ $k =$ _____

Domain: _____

Range: _____

Vertex: _____

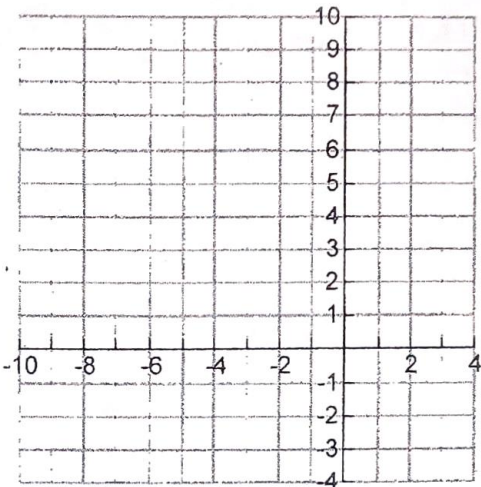
Axis of symmetry: _____

Zeros: _____

y-intercept: _____ Extrema: Max or Min _____

Interval of increase: _____ Interval of decrease: _____

End behavior: $x \rightarrow -\infty, f(x) \rightarrow$ _____
 $x \rightarrow \infty, f(x) \rightarrow$ _____



2. $f(x) = -3(x+2)^2 + 3$ opens: _____
 $a =$ _____ $h =$ _____ $k =$ _____

Domain: _____

Range: _____

Vertex: _____

Axis of symmetry: _____

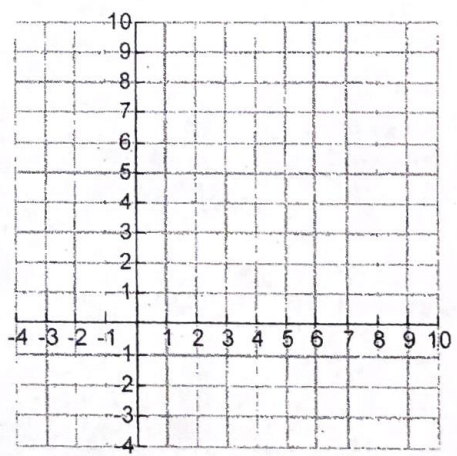
Zeros: _____

y-intercept: _____ Extrema: Max or Min _____

Interval of increase: _____ Interval of decrease: _____

End behavior: $x \rightarrow -\infty, f(x) \rightarrow$ _____
 $x \rightarrow \infty, f(x) \rightarrow$ _____

rate of change: from $x = -4$ to $x = 2$ _____



3. $y = (x+2)^2 + 1$ opens: _____

$a =$ _____ $h =$ _____ $k =$ _____

Domain: _____

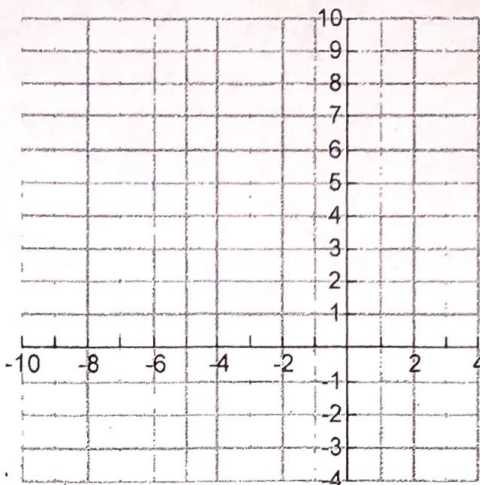
Range: _____

Vertex: _____

Axis of symmetry: _____

Zeros: _____

y-intercept: _____ Max or Min
Extrema: _____



Interval of increase: _____ Interval of decrease: _____

End behavior: $x \rightarrow -\infty, f(x) \rightarrow$ _____
 $x \rightarrow \infty, f(x) \rightarrow$ _____

rate of change from $x = -2$ to $x = 0$ _____

4. $f(x) = -(x+3)^2$ opens: _____

Domain: _____

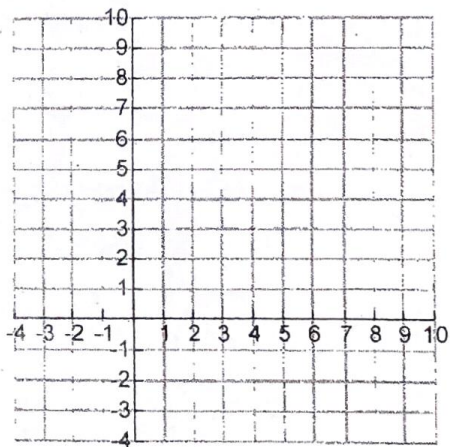
Range: _____

Vertex: _____

Axis of symmetry: _____

Zeros: _____

y-intercept: _____ Max or Min
Extrema: _____



Interval of increase: _____ Interval of decrease: _____

End behavior: $x \rightarrow -\infty, f(x) \rightarrow$ _____
 $x \rightarrow \infty, f(x) \rightarrow$ _____

rate of change from $x = -5$ to $x = -4$ _____