

*****Calculator Section*****

Use the function given to solve.

$$f(x) = 3x^2 + 2x + 4$$

$$g(x) = \sqrt{\frac{2}{x-1}}$$

1) $f(0)$

2) $f(-x)$

3) $f(x-1)$

4) $g(1)$

5) $g(9)$

6) $g(11)$

Graph each function. Find the open intervals on which the function is increasing, decreasing, & constant.

7) $f(x) = |x-3| + |x+2|$

Increasing: _____ Decreasing: _____ Constant: _____

Find all local maxima and minima. (Round to four decimal places)

8) $g(x) = x^3 - 4x + 2$

Maxima: _____ Minima: _____

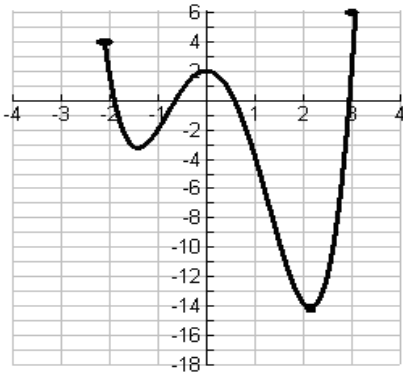
Find the open intervals on which the function is:

9) $g(x) = x^3 - 4x + 2$

Concave Up: _____ Concave Down: _____ Pt. of Inflection: _____

*****Non Calculator Section*****

Use the graph below to answer the following:



10) What is the domain of the function in Interval Notation?

11) What is the range of the function as an inequality?

12) $f(0) =$

13) $f(3) =$

14) $f(-1) + f(1) =$

Compute and simplify using the difference quotient and show all work on a separate sheet of paper.

15) $f(x) = 4x + 3$

16) $f(x) = x^2 - x + 4$

Find the domain of the following functions. Write in interval notation.

17) $f(x) = \frac{x}{x^2 - 9}$

18) $f(x) = \sqrt{3x - 12}$

19) $f(x) = \frac{\sqrt{x+5}}{x-5}$

20) $f(x) = x^2 + |x|$

21) $f(x) = \frac{2}{x^2 + 1}$

22) $f(x) = \sqrt{-x} + \frac{1}{x+3}$

Find the following for this piecewise function: $f(x) = \begin{cases} -x+1 & \text{if } x \leq -5 \\ [x]+5 & \text{if } -5 < x \leq 2 \\ x^2 - 2 & \text{if } 2 < x < 7 \end{cases}$

23) $f(-5)$

24) $f(1.7)$

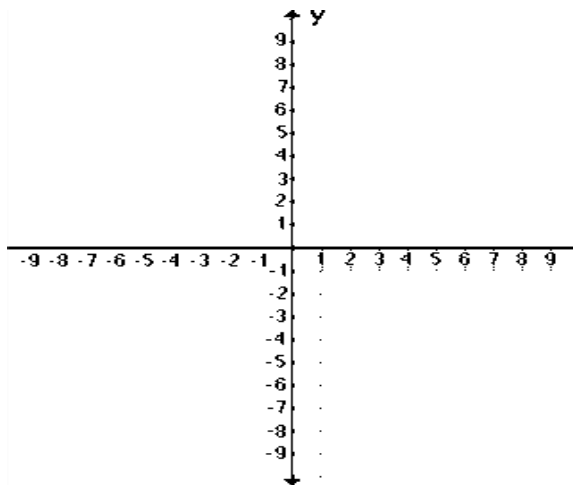
25) $f(-2.4)$

26) $f(8)$

27) Domain of $f(x)$ in interval notation

Graph the following piecewise function:

28) $f(x) = \begin{cases} -x-2 & \text{if } x \leq -3 \\ |x|+3 & \text{if } -3 < x \leq 2 \\ x^2+2 & \text{if } x < 2 \end{cases}$



Determine the characteristics of quadratic functions. Sketch a graph with at least five points...

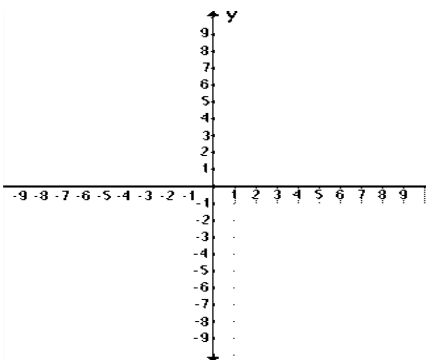
29) $f(x) = \frac{1}{2}(x+4)^2 - 2$

Vertex: _____

AOS: _____

Zeros: _____

Y-int.: _____



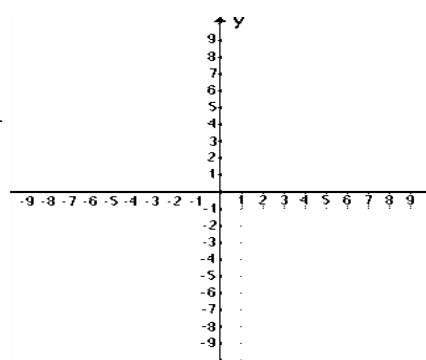
30) $g(x) = x^2 + 8x + 6$

Vertex: _____

AOS: _____

Zeros: _____

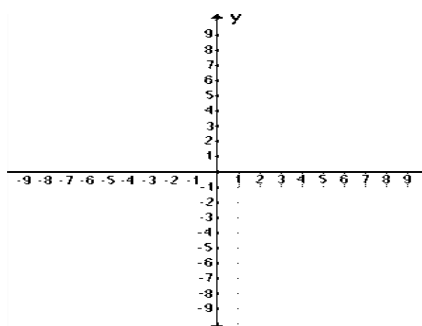
Y-int.: _____



31) $f(x) = -2(x+3)(x+1)$

Vertex: _____ AOS: _____

Zeros: _____ Y-int.: _____



Write in x-intercept form.

Write in transformation form/vertex.

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

33) $f(x) = x^2 - 6x + 5$

34) $f(x) = 3x^2 - 12x + 6$

35) Write a rule in transformation form of the quadratic function whose graph is the parabola with the vertex of $(-4, 2)$ that passes through the point $(0, -2)$