Name:_____

Section 1:   Selected Response   (30 points)
        Place the letter of the correct answer in the space provided.

1.   What is the end behavior of the graph of: $f(x) = -3x^3 + 2x^2 - x - 6$?   1.____

A) Q2 to Q1   B) Q3 to Q1   C) Q2 to Q4   D) Q3 to Q4

2. What is the y-intercept of the graph of the function, $f(x) = 4x^3 + x^2 + 2x + 1$?   2.____

A)   1   B)   2   C)   3   D)   4

3. How many possible x-intercepts can $f(x) = -3x^3 - 2x^2 + 4x - 5$ have?   3.____

A) 0   B) 0, 1, or 2   C) 0, 1, 2, or 3   D) 1, 2, or 3

4. Determine the leading coefficient of this polynomial function: 4. ____

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

A) 4   B) –2   C) 1   D) 5

5. From which quadrants does the graph of $f(x) = -2x^3 - 7x + 3$ extend?   5.____
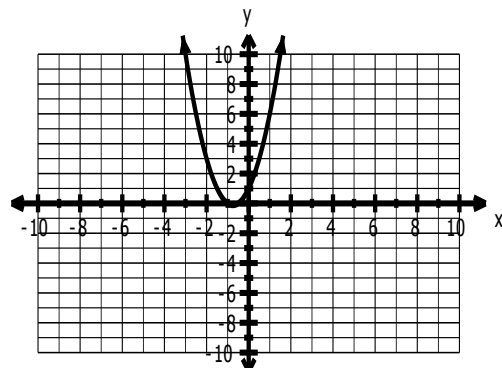
A) II to I   B) III to I   C) II to IV   D) III to IV

6. How many turning points can a quadratic polynomial have?   6.____

A) 1   B) 1, 2, or 3   C) 0 or 2   D) 2

7. What is the range of the function shown?   7. _____

        a) $\{y|y \in R\}$

        b) $\{y|y > 0, y \in R\}$

        c) $\{y|y \geq 0, y \in R\}$

        d) $\{y|y \leq 0, y \in R\}$

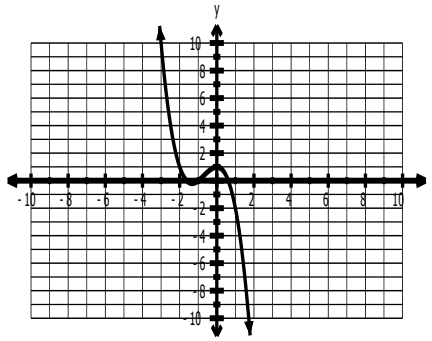8. Determine the equation of this polynomial function: 8. _____

A) $f(x) = -x^2 - 3x - 1$

B) $f(x) = x^2 - 2x + 1$

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

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

9. Which function passes through the point $(1, -7)$?   9. _____

    A) $f(x) = -x^3 - 3x^2 + x - 4$
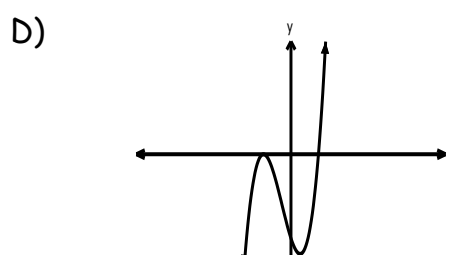
    B) $f(x) = -x^3 - 2x^2 + x - 7$
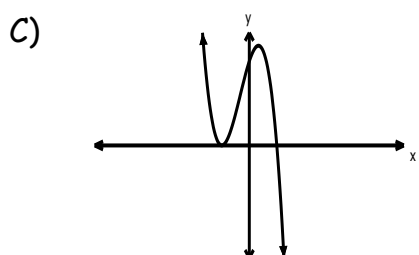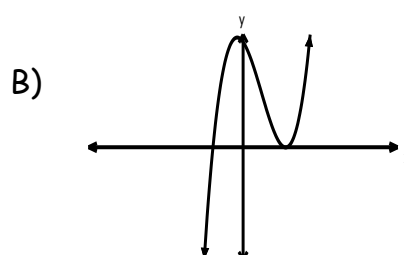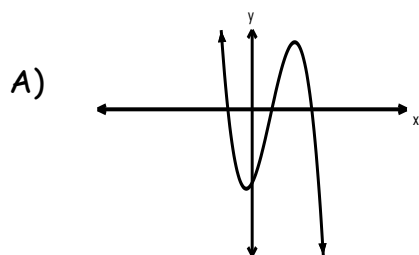
    C) $f(x) = x^3 + 2x^2 - 4$

    D) $f(x) = x^3 + 3x^2 - 7$

10. Which graph best represents a function with the characteristics listed below?

10. _____

- Two x-intercepts
- Extending from Quadrant II to Quadrant IV

A)

B)

C)

D)

11.   How many turning points can a cubic polynomial have?   11.___

    A) 0, 1, or 2   B) 1, 2, or 3   C) 0 or 2   D) 2

12.   What is the maximum number of x-intercepts that a polynomial   12.___
function of degree 2 will have?
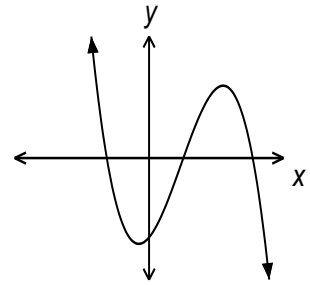
    A) 0   B) 1   C) 2   D) 3

13.   Describe the characteristics of the function shown.   13.____

   A) Positive leading coefficient, extends from Q III to Q I

   B) Positive leading coefficient, extends from Q II to Q IV

   C) Negative leading coefficient, extends from Q III to Q I

   D) Negative leading coefficient, extends from Q II to Q IV
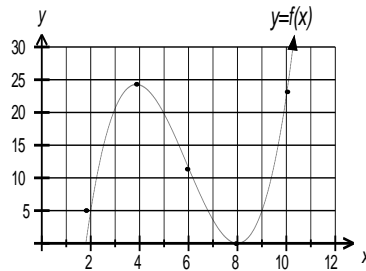

14.   What is the range of $y = -2x + 5$?   14.____

   A) $\{x|x \in R\}$ B) $\{y|y \le 5, y \in R\}$

   C) $\{y|y \in R\}$ D) $\{y|y \ge 5, y \in R\}$

15.   Given the table, the scatter plot and the curve of best fit of the polynomial $f(x)$, what is the value of $f(7)$?   15. _____

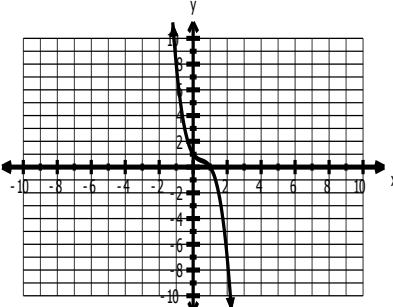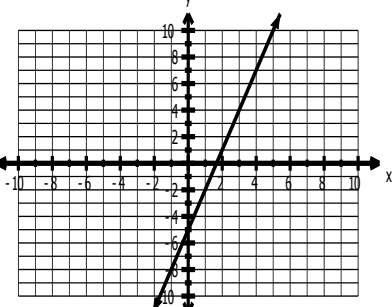| X	Y
2	5
4	24
6	12
8	0
10	23

(A)   2   (B)   5   (C)   18   (D)   20

Section 2:   Constructed Response
Answer all of the following in the space provided.

1.   Determine the following characteristics of each function: (12 points)

Characteristics	$f(x) = 3x^3 - 4x^2 + 2x - 1$	$f(x) = -(x+2)^2 - 5$
Number of possible x-intercepts		
y-intercept		
Domain		
Range		
Number of possible turning points		
End behaviour		

2. Determine the following characteristics for the following polynomials: (16 points)

Characteristics		
Degree		
Sign of Leading Coefficient		
Constant term of function		
End behaviour		
y-intercept		
Domain		
Range		

3. Sketch a possible graph of polynomial functions that satisfy each set of characteristics: (6 points)

A) Quadratic, two x-intercepts, positive leading coefficient

B) Two turning points (one in Q1 and Q3), negative leading coefficient and constant term of 2

4. Sketch two possible graphs that are different, yet both are cubic functions with negative leading coefficients and negative y-intercepts. Explain why the graphs you sketched are different. (4 points)

Graph 1:   Graph 2:

_____

_____

_____

_____
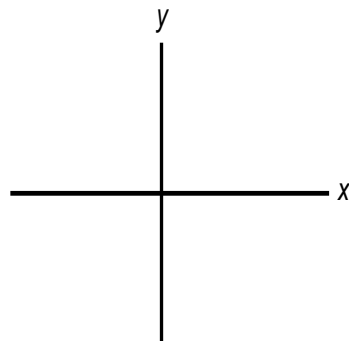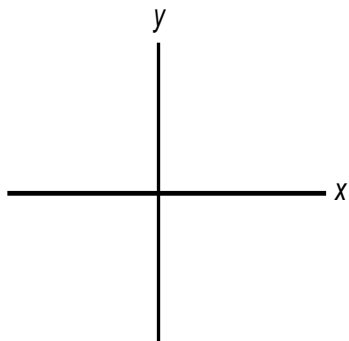
5.   It takes Karen and Jessica 6 minutes to collect their school's recycables when they work together. If Karen works by herself it will take her 5 minutes less than Jessica, if Jessica collects the recyclables by herself. Set up a rational equation to model the situation and use it to algebraically determine how long it would take Karen to collect the recyclables if she works alone. (7 points)

6.   Solve the following: (Identify your restrictions)   (10 points)

A) $\frac{3-y}{3y} + \frac{1}{4} = \frac{1}{2y}$

B) $\frac{6}{x-3} - \frac{x+3}{x^2-9} - 5$