Mathematics 3201
Unit 5: Polynomial Functions
Practice Assignment

Name:_____

Section 1: Constructed Response (20 points)
Select the letter of the correct response.

1. What is the leading coefficient of the polynomial: $y = -2x^2 + 5x - 3$?

A) -3 B) -2 C) 5 D) x

2. What is the end behaviour of the graph of: $y = -3x^3 + 4x + 5$

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

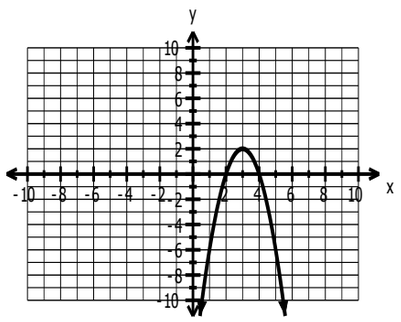
3. How many turning points can a cubic polynomial have?

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

4. What is the domain of $y = 3x - 1$?

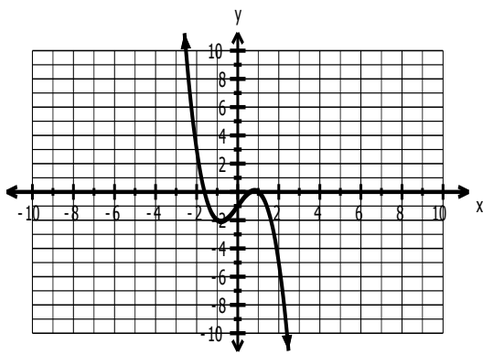
A) $\{x|x \in R\}$ B) $\{x|x \geq -1, x \in R\}$ C) $\{y|y \in R\}$ D) $\{y|y \geq -1\}$

5. What is the range of:



A) $\{x|x \geq 3, x \in R\}$
B) $\{x|x \leq 3, x \in R\}$
C) $\{y|y \geq 2, x \in R\}$
D) $\{y|y \geq 2, x \in R\}$

6. What is the equation of the following graph?



A) $\{x^3 + 2x - 1\}$
B) $\{-x^3 + 2x - 1\}$
C) $\{x^3 + 2x + 1\}$
D) $\{-x^3 + 2x + 1\}$

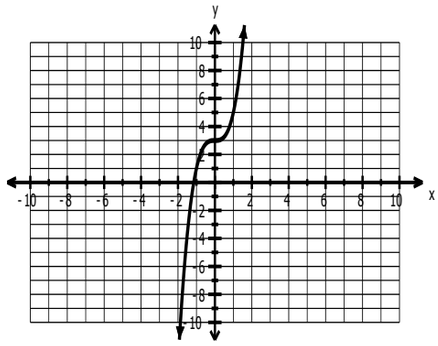
7. What is the maximum number of turning points that a polynomial with degree 2 can have?

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

8. What is the y-intercept of $y = 2x^2 + 3x - 5$?

A) -5 B) 2 C) 3 D) none

9. What is the constant term for the following graph?



A) 0

B) -1

C) 3

D) 1

10. What is the constant term of the polynomial function: $y = -3x^3 + 5x - 7$?

A) -7 B) -3 C) 3 D) 5

11. What is the leading coefficient for the polynomial function: $y = 2x^3 - 4x + 7$?

A) -4 B) 2 C) 3 D) 7

12. What is the end behaviour of the graph of: $y = -4x^2 - 7$?

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

13. How many turning points can a polynomial with degree 1 have?

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

14. What is the degree of $y = 2x^3 - 4x^2 + 7x - 3$?

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

15. What is the y-intercept of $y=-4x^3 + 3x^2 + 8x - 6$?

A) -6 B) -4 C) 3 D) 8

16. What is the maximum number of x-intercepts for $y = 3x - 5$?

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

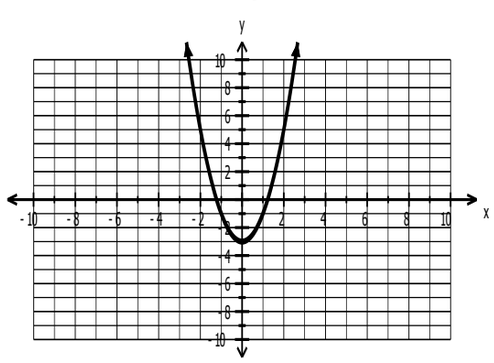
17. What is the y-intercept of $y = -x^3 + 3x - 9$?

A) -9 B) -1 C) 3 D) 5

18. What is the constant term of $y = x^3 + 6x^2 + 4$?

A) 2 B) 3 C) 4 D) 6

19. What is the leading coefficient for the graph:



A) 0

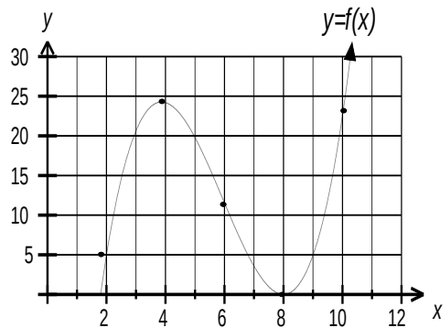
B) 1

C) 2

D) 3

20. Given the table, the scatter plot and the curve of best fit of the polynomial *f(x),* what is the value of *f*(9)?

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



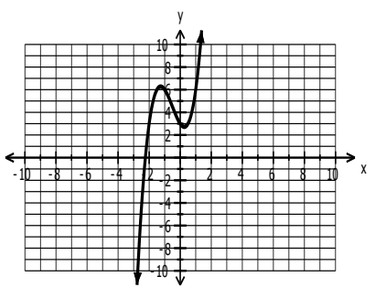
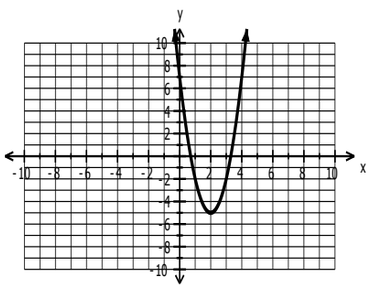
A) 20 B) 5 C) 10 D) 17

Section 2: Constructed Response
Complete each question in the space provided.

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

Characteristics	**$f(x) = -3x^3 - 4x^2 + 2x - 1$**	**$f(x) = 2(x-3)^2 + 3$**
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: (12 points)

A) Quadratic, one x-intercept, negative leading coefficient

B) Two turning points (one in Q2 and Q4), positive leading coefficient and constant term of -4

C) Degree 2, one turning point which is a maximum, constant term of 3

D) Degree 1, positive leading coefficient and y-intercept of -2

4. Write an equation for a polynomial function that satisfies each set of characteristics: (12 points)

A) Degree 1, decreasing function, y-intercept of -2	B) one turning point, maximum value, y-intercept of 3
C) extending from Q2 to Q4, y-intercept of 0, not a straight line	D) extending from Q2 to Q1, y-intercept of 5 no x-intercept or turning point

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