Math 3201   **Chapter 5 & 4.5:**   Name:_____

Part I: Place the letter of the correct answer in the space provided. (30 mks)

1. What is the leading coefficient of the polynomial: $y = -5x^3 + 4x - 7$?   1.____

A) -7   B) -5   C) 3   D) 4

2. What is the end behavior of the graph of: $y = 4x^2 - 3x + 2$?   2.____

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

3. What is the y-intercept of $y = 2x^3 + 5x^2 - 6x + 1$?   3.____

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

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

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

5. Determine the leading coefficient of this polynomial function: 5. _____

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

A) 4   B) –2   C) 1   D) 5

6. From which quadrants does the graph of $f(x) = -2x^3 - 7x + 3$ extend?   6.____

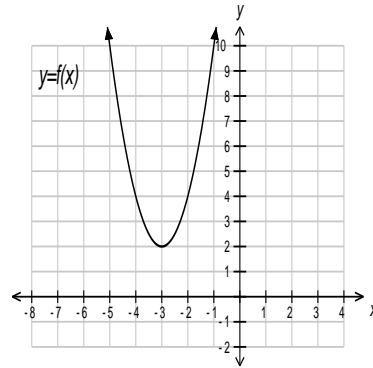A) II to I   B) III to I   C) II to IV   D) III to IV

7. How many turning points can a cubic polynomial have?   7.____

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

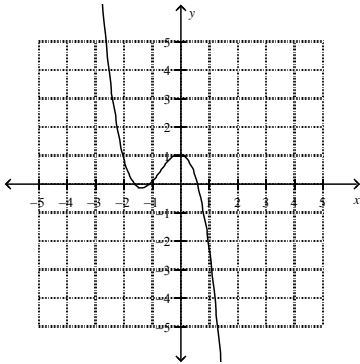8. What is the range of the function $y = f(x)$ shown in the graph below?　　8. _____

(A)　　$\{y \mid y \le -2, y \in R\}$

(B)　　$\{y \mid y \ge -2, y \in R\}$

(C)　　$\{y \mid y \le 2, y \in R\}$

(D)　　$\{y \mid y \ge 2, y \in R\}$

9. Determine the equation of this polynomial function:　　9. _____

A)　$f(x) = -x^2 - 3x - 1$

B)　$g(x) = x^2 - 2x + 1$

C)　$h(x) = -x^3 - 2x^2 + 1$

D)　$j(x) = x^3 + 2x$

10. What is the maximum number of x-intercepts that a polynomial function of degree 2 will have?　　10.____

A) 0　　　　　　　B) 1　　　　　　　C) 2　　　　　　　D) 3

11. What is the degree of the polynomial $y = 2x - 4$?　　11.____

A) 0　　　　　　　B) 1　　　　　　　C) 2　　　　　　　D) 4

12. What is the domain of $y = x^2 - 4x + 1$?　　　　　　　　　　　　　　12.___

A) $\{x | x \in R\}$　　　　　　　　　B) $\{x | x \geq 1, x \in R\}$

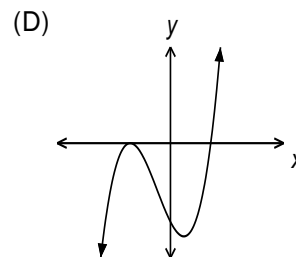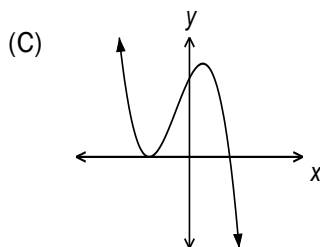C) $\{x | x \geq 2, x \in R\}$　　　　　　D) $\{x | x \geq -3, x \in R\}$
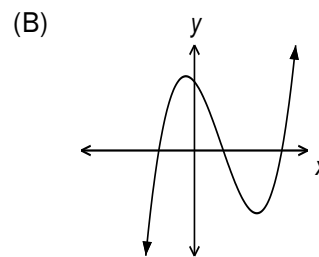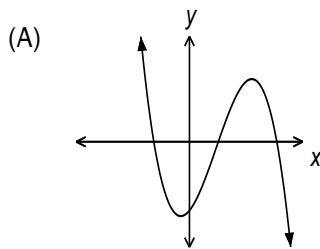

13. Which function passes through the point $(1, -7)$?　　　　　　　　　13. _____

(A)　　　$f(x) = -x^3 - 3x^2 + x - 4$

(B)　　　$f(x) = -x^3 - 2x^2 + x - 7$

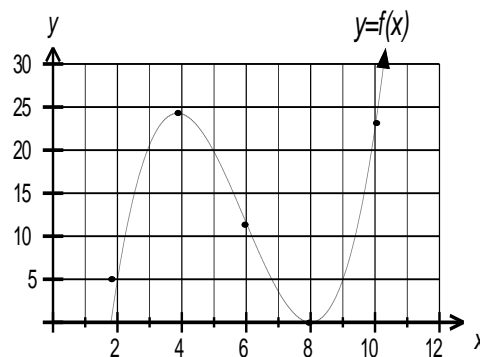(C)　　　$f(x) = x^3 + 2x^2 - 4$

(D)　　　$f(x) = x^3 + 3x^2 - 7$

14. Which graph best represents a function with the characteristics listed below?　14. _____

- Three x-intercepts

- Extending from Quadrant II to Quadrant IV

(A)

(B)

(C)

(D)

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

what is the value of $f(5)$?

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

(A)   2   (B)   9   (C)   18   (D)   20

Part II: Complete each question in the space provided. (35 mks)

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

a) $f(x) = -4x^3 + 2x^2 - x + 1$ b) $f(x) = 5x - 2$

number of **possible** x-intercepts _____   number of **possible** x-intercepts _____

y-intercept _____   y-intercept _____

domain _____   domain _____

range _____   range _____

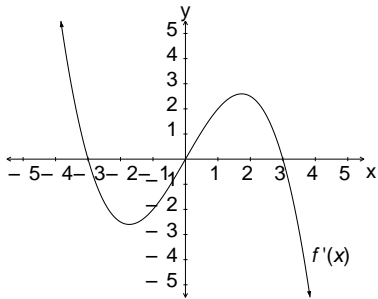number of **possible** turning points _____   number of **possible** turning points _____

end behaviour _____   end behaviour _____

2. Determine the following characteristics for the polynomial functions graphed. (12 mks)

a)

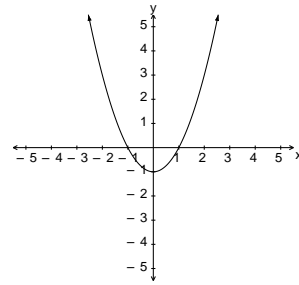
b)

Degree _____

Sign of leading coefficient _____

Constant term of function _____

End behaviour _____

Domain _____

Range _____

Degree _____

Sign of leading coefficient _____

Constant term of function _____

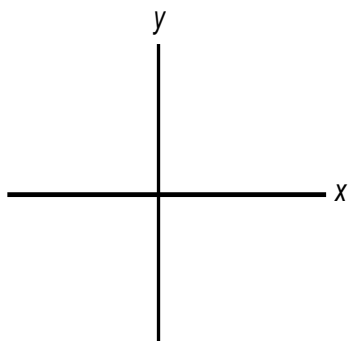End behaviour _____

Domain _____

Range _____

3. It takes Karen and Jessica 6 minutes to collect their school's recyclables 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 mks)

4. Sketch two possible graphs that are different, yet are both cubic functions with

negative leading coefficients and negative y-intercepts. Explain why the graphs you have sketched are different.   (4 mks)

Graph 1:   Graph 2:

_____

_____

_____

_____