MCT 4C
Mr. Kempe

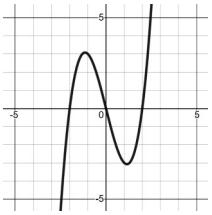
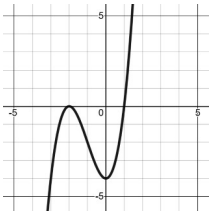
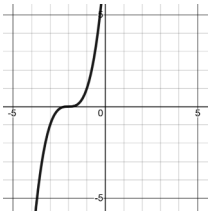
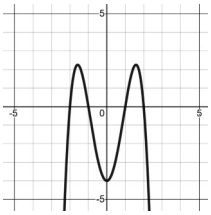
Name: _____
Date: _____

Test #2 – Polynomial Functions

Part A: Multiple Choice [K/U, 10 marks]

1. Which of the following functions has the **highest** degree?
   a. $y=5x^3-4x$ b. $y=x^7-x^6-x^3$ c. $y=25x^2-9$ d. $y=9x^4-9x^2+4$

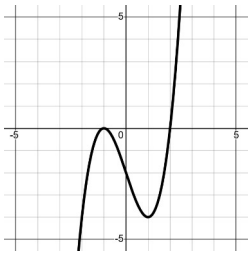
2. What is the end behaviour of the function $y=0.5x^4$?
   a. Q3 to Q1 b. Q2 to Q1 c. Q2 to Q4 d. Q3 to Q4

3. Which of the following functions has a **triple root**?
   a.  b.  c.  d. 

4. From a table of values, the 4th differences of a polynomial are 12. What is the **degree** of the function?
   a. 2 b. 4 c. 12 d. 24

5. From a table of values, the 4th differences of a polynomial are 12. What is the **leading coefficient** of the function?
   a. 0.5 b. 2 c. 4 d. 12

6. What is the equation of the cubic function, shown right?
   a. $y=(x+2)(x-1)$ b. $y=(x+2)(x-1)^2$
   c. $y=(x-2)(x+1)$ d. $y=(x-2)(x+1)^2$



7. What is the factored form of $x^2+14x+24$?
   a. $(x+1)(x+24)$ b. $(x+2)(x+12)$ c. $(x+3)(x+8)$ d. $(x+4)(x+6)$

8. What is the factored form of c^2-16d^2 ?
   a. $(c-4d)(c-4d)$ b. $(c-4d)(c+4d)$
   c. $(c+4d)(c+4d)$ d. $(c-16d)(c+16d)$

9. What is the factored form of $ax-ay-bx+by$?
   a. $(a+b)(x+y)$ b. $(a-b)(x-y)$ c. $(a+b)(x-y)$ d. $(a-b)(x+y)$

10. What type of factoring should you always try first?
    a. Common b. Grouping c. Trinomial d. Fear

MCT 4C Name: _____
Mr. Kempe Date: _____

Part B: Definition / Short Answer

1. Given the **degree** and the **leading coefficient** of a polynomial function, describe how you determine the end behaviour of the function. [2]

2. Explain the connection between the **degree**, **leading coefficient**, and the **constant finite differences** and a polynomial function. [2]

3. Explain how to identify a **double root** and a **triple root** on a graph. [2]

4. Describe how to determine the **equation** of a polynomial function from it's graph. [2]

5. List the sequence of factoring we learned in this unit. [2]

MCT 4C
Mr. Kempe

Name: _____
Date: _____

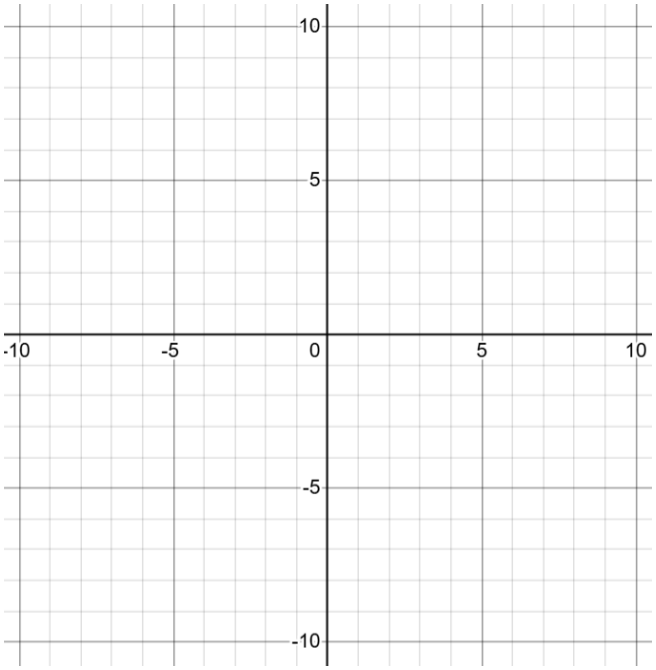
Part C: Problem Solving [ATIPS, 20 marks]

Complete any 5 of 6 problems.

1. Determine the degree and leading coefficient of the following function. [4]

x	*y*
0	20
1	15
2	20
3	20
4	12
5	5
6	20

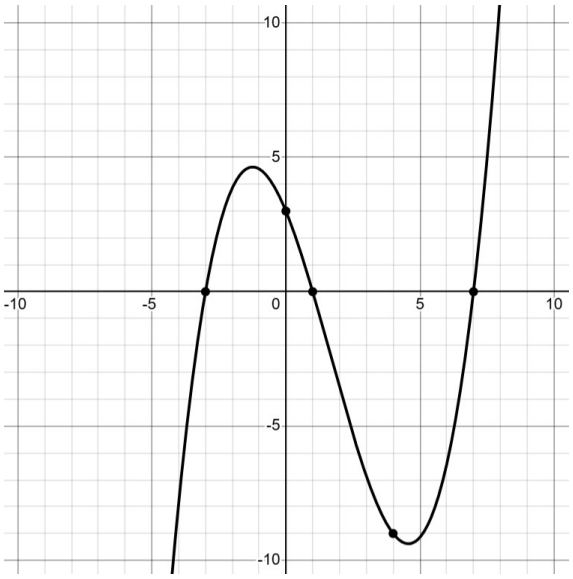
2. Sketch the graph of $y=-0.25(x+4)(x-2)(x-3)$. [4]



MCT 4C
Mr. Kempe

Name: _____
Date: _____

3. Determine the equation of the graph shown. [4]



4. Factor. [4]

a. $6x^2-11x+4$

b. x^4-8x^2+16

MCT 4C Name: _____
Mr. Kempe Date: _____

5. The expression for the area of a rectangle is $A = \pi x^2 + 6\pi x + 9\pi$.

   a. Determine an expression for the radius of the circle.

   b. Determine area and radius of the circle when $x = 4$.

6. The formula for the surface area of a square-based prism is $SA = 2w^2 + 4wh$, where w is the width of the square and h is the height of the box.

   a. Determine the surface area if the width is 10cm and the height is 5 cm.

   b. Determine the width if the height is 8cm and the surface area is 72cm².

MCT 4C
Mr. Kempe

Name: _____
Date: _____

Bonus.

1. Divide $x^3-10x^2-15x+18$ by $x-2$. [1]

2. Factor x^3-2x^2-5x+6 using division. [1]