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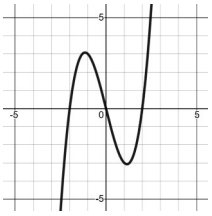
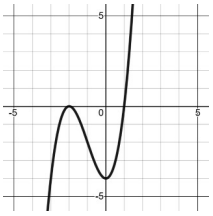
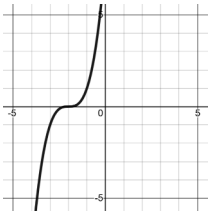
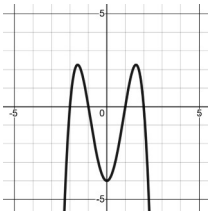
Mr. Kempe Unit 2, Practice Test

Practice Test – Polynomial Functions

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

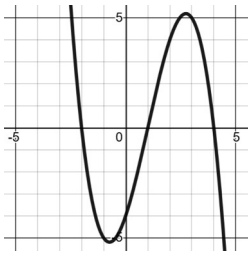
1. Which of the following functions has a degree of 4?
   a. $y=4x^2-3x+1$ b. $y=4x^3-2x+5$ c. $y=3x^3+x^2-6x+5$ d. $y=2x^4+x^3-4x+1$

2. What is the end behaviour of the function $y=-2x^3$?
   a. Q3 to Q1 b. Q2 to Q1 c. Q2 to Q4 d. Q3 to Q4

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

4. From a table of values, the 3rd differences of a polynomial are 12. What is the **degree** of the function?
   a. 2 b. 3 c. 6 d. 12

5. From a table of values, the 3rd differences of a polynomial are 12. What is the **leading coefficient** of the function?
   a. 2 b. 3 c. 6 d. 12

6. What is the equation of the cubic function, shown right?
   
   a. $y=\frac{1}{2}(x-2)(x+1)(x+4)$ b. $y=-\frac{1}{2}(x-2)(x+1)(x+4)$
   c. $y=\frac{1}{2}(x+2)(x-1)(x-4)$ d. $y=-\frac{1}{2}(x+2)(x-1)(x-4)$

7. What is the factored form of $x^2+8x+12$?
   a. $(x+1)(x+12)$ b. $(x+2)(x+6)$ c. $(x+3)(x+4)$ d. $(x+3)(x+5)$

8. What is the factored form of $4x^2-9y^2$?
   a. $(2x-3y)(2x-3y)$ b. $(2x+3y)(2x+3y)$
   c. $(2x-3y)(2x+3y)$ d. $(2x^2-3y)(2x+3y^2)$

9. What is the factored form of $x^3-7x^2-5x+35$?
   a. $(x-7)(x^2-5)$ b. $(x+7)(x^2-5)$ c. $(x-7)(x^2+5)$ d. $(x+7)(x^2+5)$

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

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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]

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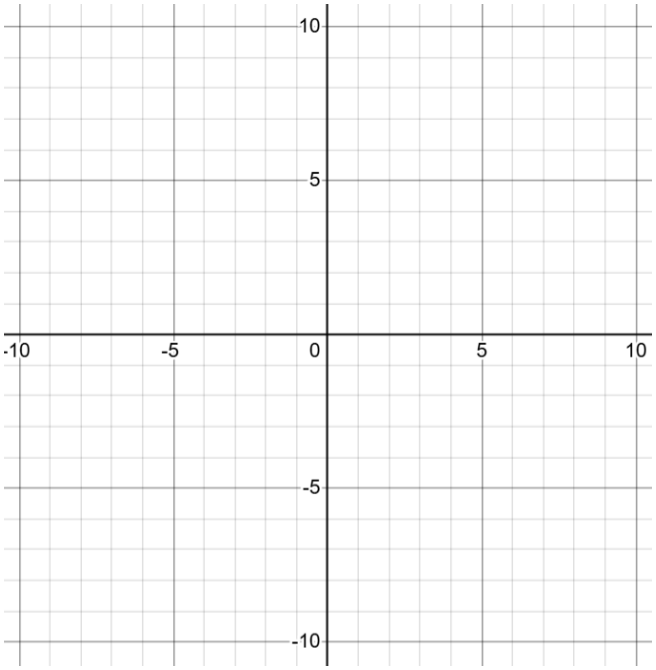
Part C: Problem Solving [ATIPS, 20 marks]

Complete any 5 of 6 problems.

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

x	*y*
0	300
1	301
2	290
3	255
4	184
5	65
6	-114

2. Sketch the graph of $y=\frac{1}{2}(x-4)(x+2)(x-2)$. [4]



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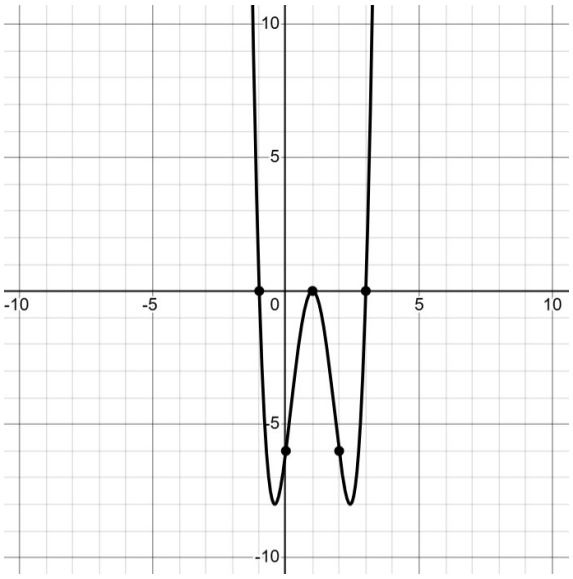
3. Determine the equation of the graph shown. [4]



4. Factor. [4]

a. $2x^2-30x+100$

b. $4x^3-8x^2-9x+18$

5. The expression for the area of a rectangle is $A = 2x^2 + 13x + 15$.

   a. Determine expressions for the length and width of the rectangle.

   b. Determine the dimensions if $x = 4$.

6. The formula for the surface area of a cylinder is $SA = 2\pi r^2 + 2\pi r h$.

   a. Determine the surface area if the radius is 6cm and the height is 7cm.

   b. Determine the height if the radius is 10cm and the surface area is 785.4cm².