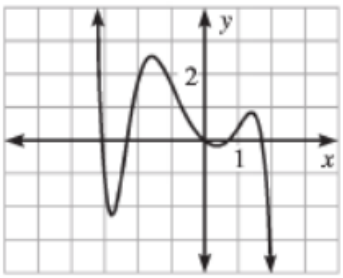
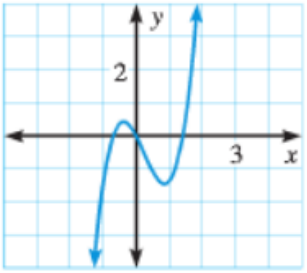
Math 3 Name:_____

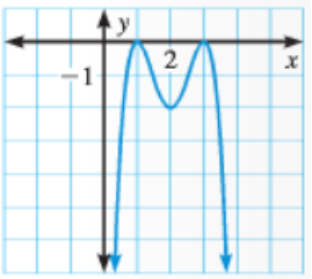
Unit 3 Test Review Date:_____

1. Look at the graphs below and answer the following:

a) What is the degree?
b) How many zeros does the function have?
c) Describe the end behavior
d) State the interval(s) where the function is increasing
e) Circle any extrema







2. Which polynomial function has zeros at 5, –4, and –3 ?

a. $f(x) = x^3 - 60x^2 + 2x - 23$

b. $f(x) = x^3 + 2x^2 - 23x + 7$

c. $f(x) = x^3 - 17x^2 - 420x + 7$

d. $f(x) = x^3 + 2x^2 - 23x - 60$

3. Find the zeros of $f(x) = (x + 2)^6(x + 3)^4$ and state the multiplicity.

a. –2, multiplicity 6; 4, multiplicity –3

b. –2, multiplicity 6; –3, multiplicity 4

c. 6, multiplicity –2; –3, multiplicity 4

d. 6, multiplicity –2; 4, multiplicity –3

4. Divide $-x^3 + 4x^2 - x - 3$ by $x + 2$.

a. $-x^2 + 6x - 13$

b. $-x^2 + 2x + 11$, R –29

c. $-x^2 + 2x + 11$

d. $-x^2 + 6x - 13$, R 23

5. Divide $(x^4 + 12x^3 - 91x^2 + 26x + 20) \div (x - 5)$

a. $x^3 + 17x^2 - 6x - 4$

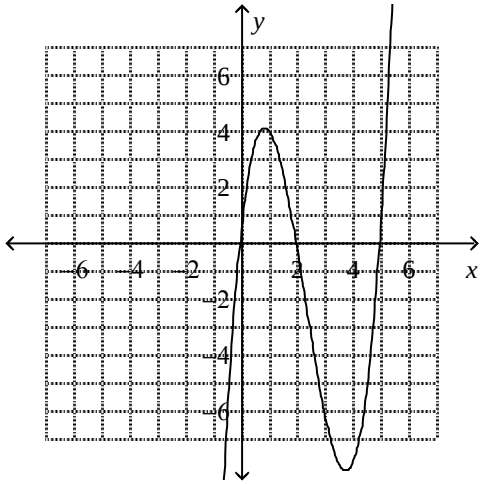
b. $x^3 - 22x^2 - 79x + 34$

c. $x^3 + 12x^2 - 22x + 34$

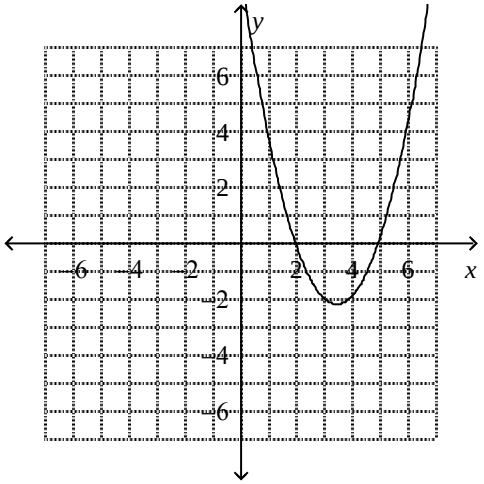
d. $x^3 - 6x^2 - 4x + 17$

6. Find the zeros of $y = x(x - 5)(x - 2)$. Then graph the equation.

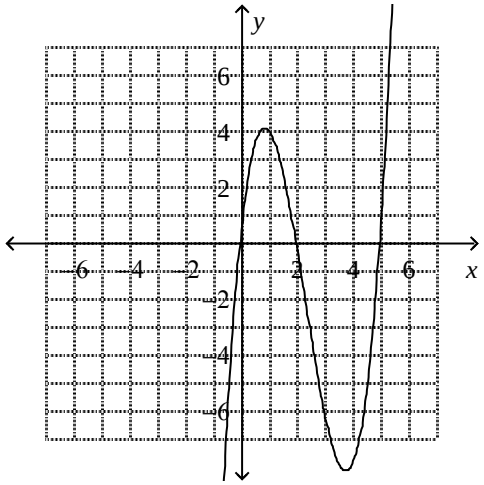
a. 5, 2, –5



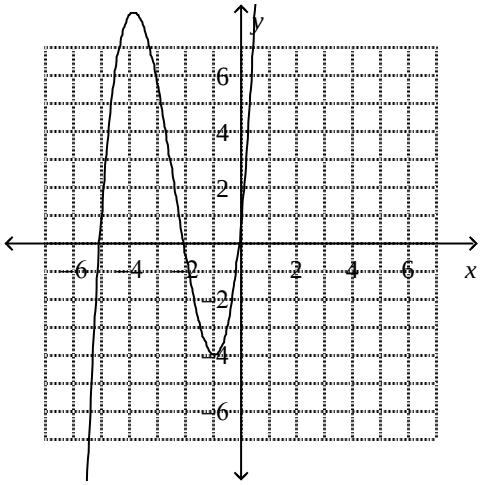
c. 5, 2



b. 0, 5, 2



d. 0, –5, –2



7. Determine which binomial is a factor of $-2x^3 + 14x^2 - 24x + 20$.

a. $x+5$ b. $x+20$ c. $x-24$ d. $x-5$

Find the roots of the polynomial equation

8. $x^3 - 2x^2 - x + 2$

a. -1, 1, 2

b. -2, 1 (mult. 2)

c. 2, -1 (mult. 2)

d. 2, -2, 1

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

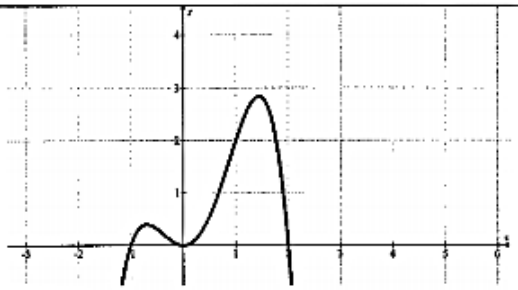
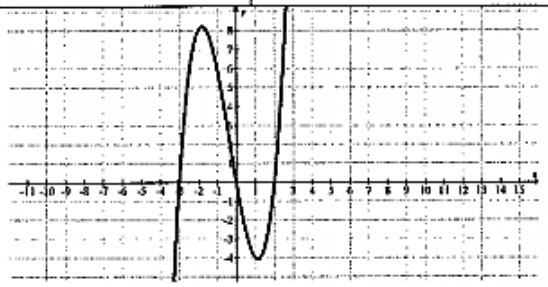
a. -2, 2, 0

b. 0, 1, 2

c. 2, -2 (mult. 2)

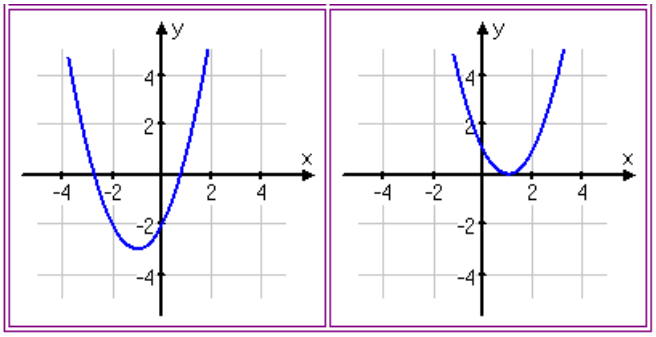
d. -2, 2 (mult. 2)

10. Complete the following table

Convert factors to roots	(x + 5)	(x – 3)	(2x + 8)
Convert the roots to factors	X = 7	X = -9	X = 1/3
Identify the FACTORS of the roots shown in the graph	 Factors:		 Factors:
Multiplicity of the functions graphed above	Root x = 0, multiplicity = _____ Root x = -1, multiplicity = _____ Root x = 2, multiplicity = _____		Root x = -3, multiplicity = _____ Root x = -1, multiplicity = _____ Root x = 2, multiplicity = _____
Multiplicity of the each root in the function	$(x-3)^2(x+1)(x-2)^3$ Root: x = 3, multiplicity = _____ X = -1, multiplicity = _____ X = 2, multiplicity = _____		$(x-4)(x)(x+3)^5$ Root: x = 4, multiplicity = _____ X = 0, multiplicity = _____ X = -3, multiplicity = _____

11. Write an equation for the transformation of x^3 three units left, two units up and reflected across the x-axis.

12. Write an equation for each graph below as a transformation from $y = x^2$



13. A rectangular swimming pool is twice as long as it is wide. A small concrete walkway surrounds the pool. The walkway is a constant 2 feet wide and has an area of 196 square feet. Find the dimensions of the pool.

14. The total number of video cassettes sold from 1995 to 2005 at Bob's store can be modeled by the function $F(x) = 4x^3+14x^2+200x+1560$ and the number of kinds of video cassettes in Bob's store from 1995 to 2005 can be modeled by $G(x) = 2x + 12$, where x is the number of years since 1995. Using division, find the average number of each kind of video cassettes that Bob sold.