



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## GRAPHING POLYNOMIALS WORKSHEET #2

1. Compare the graphs of polynomials of odd degree with those of even degree. What do you think this determines on your graph?
  
2. Compare the factors with odd powers to those with even powers. What do you think this determines on your graph?
  
3. Compare the equations with positive leading coefficients with those of negative leading coefficients. What do you think this determines on your graph?
  
4. How do we determine the y-intercept of a graph using only its equation?
  
5. How do we determine the x-intercepts of a graph using only its equation?
  
6. Determine a connection between when the graph touches the x-axis at an x-intercept or when the graph goes through the x-axis at an x-intercept.

### Extending Your Learning:

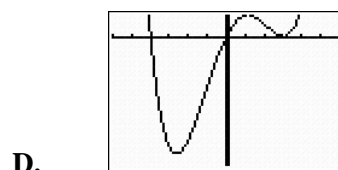
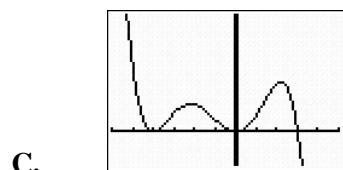
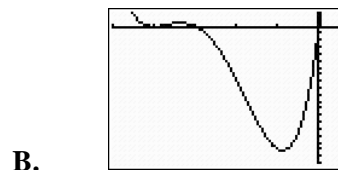
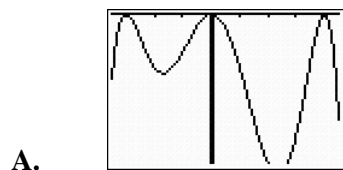
Using what you have learned, match the equation to its appropriate graph.

7.  $y = x(x-3)^2(x+4)$

9.  $y = x(x+3)(x+4)^2$

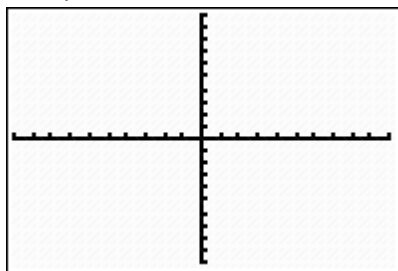
8.  $y = -x^2(x-3)(x+4)^2$

10.  $y = -x^2(x+3)^2(x+4)^2$

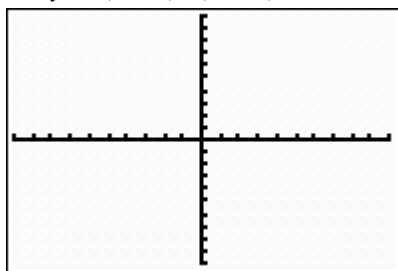


In the space provided, sketch a graph of the equation without using your calculator. Note the x-intercepts and y-intercept on the axes. You need not worry about proper scaling on the y-axis.

11.  $y = -x^3(x-5)^2$

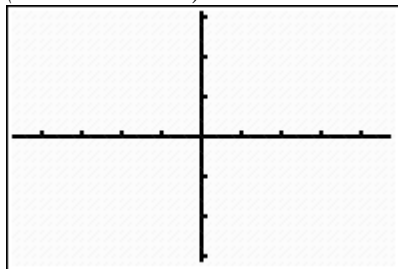


12.  $y = (x-1)^4(x+3)^2$



13.  $y = x^4 - 8x^2 + 16$

(Hint: Factor!!)



14. Now, write an equation for a polynomial whose graph has the following characteristics:

- As  $x \rightarrow -\infty, y \rightarrow \infty$  and as  $x \rightarrow \infty, y \rightarrow \infty$
- The graph is tangent at both its x-intercepts -5 and 2.

Write your equation here: \_\_\_\_\_

What is the y-intercept of your graph? \_\_\_\_\_