

**Math 3**

**Unit 3 Lesson 2 Activity**

For each of the following, use the leading coefficient test, end behavior, and zeros to match each function to its graph.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1.  $f(x) = x^3 - 3x^2$

6.  $f(x) = -2x^3 + 8x$

11.  $f(x) = -2(x+3)^2(x+1)^2$

2.  $f(x) = x$

7.  $f(x) = (x-1)(x-3)(x-5)$

12.  $f(x) = -x^3 + 9x$

3.  $f(x) = -3(x-1)(x-2)^2(x-3)$

8.  $f(x) = -2x^2 + 16x - 24$

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

4.  $f(x) = 9 - 4x^2$

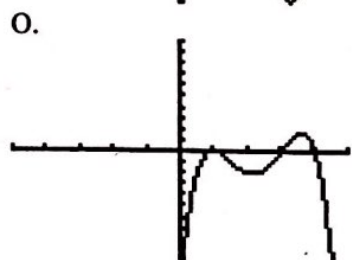
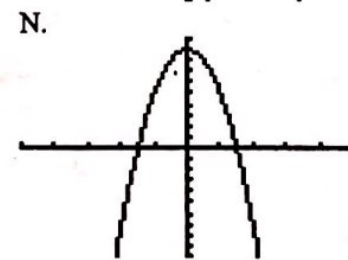
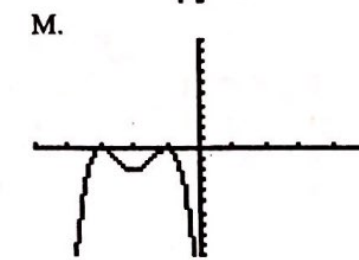
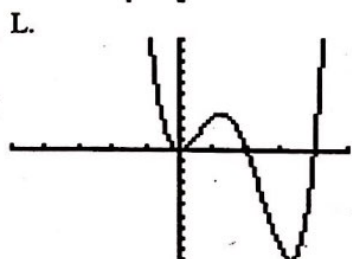
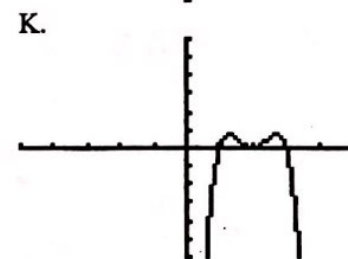
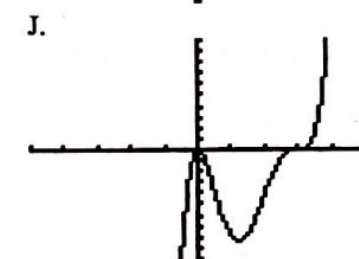
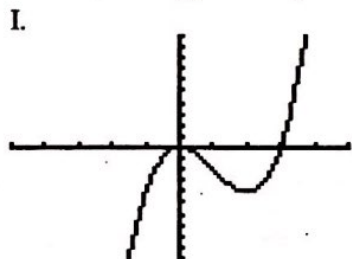
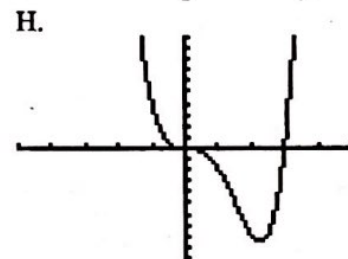
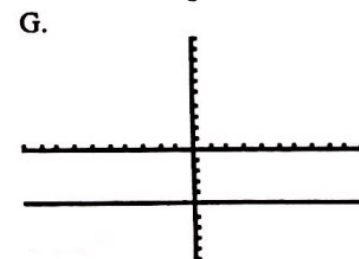
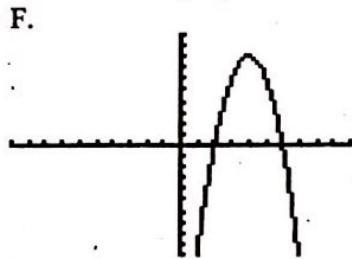
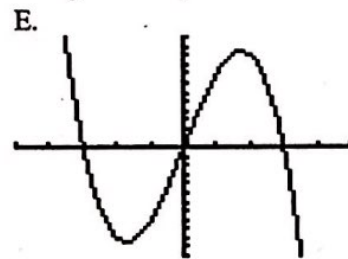
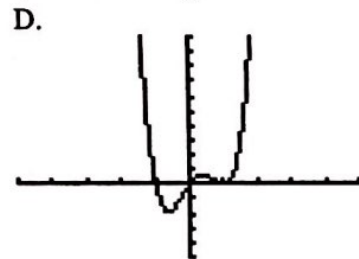
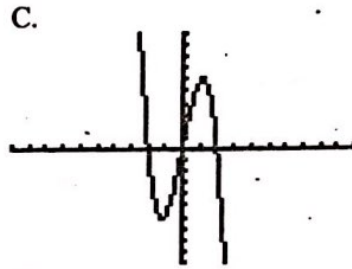
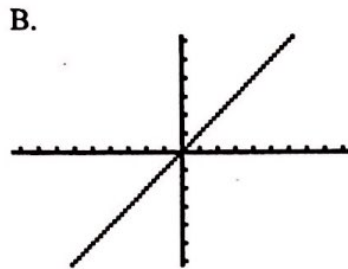
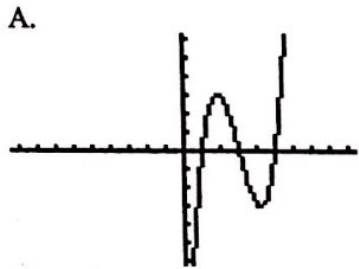
9.  $f(x) = -(x-4)(x-3)(x-1)^2$

14.  $f(x) = -5$

5.  $f(x) = x^2(x-3)^3$

10.  $f(x) = x^4 - 3x^3$

15.  $f(x) = x^4 - 6x^3 + 8x^2$



1. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

2. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

3. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

4. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

5. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

6. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

7. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

8. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

9. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

10. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

11. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

12. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

13. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

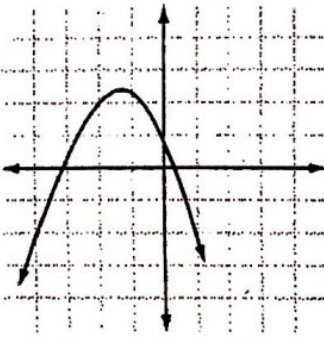
14. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

15. Matching Graph: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
End Behavior: \_\_\_\_\_  
\_\_\_\_\_

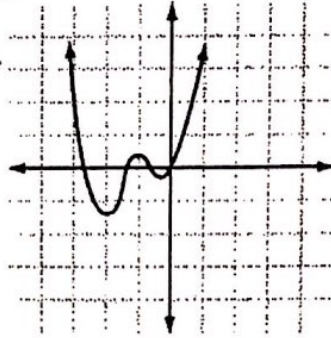
More Practice

Use the graphs to fill in the table

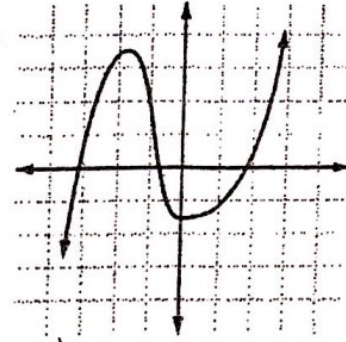
1.



2.



3.



Function	$n$ degree (circle one)	Lead coef. (circle one)	End Behavior	How many $x$ - intercepts?
1.	Odd Even	Positive negative	$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	
2.	Odd Even	Positive negative	$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	
3.	Odd Even	Positive negative	$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	

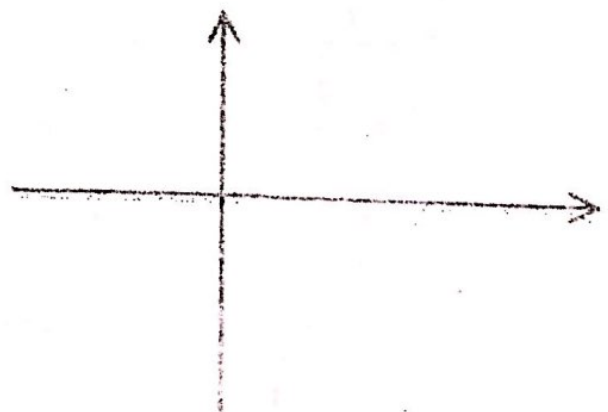
Fill in the table for each of the following functions, then sketch the graphs.

Function	$n$ degree	$a$ Lead coef.	End Behavior (use $n$ and $a$ )	$x$ -intercepts
4. $f(x) = x(x-4)^2$			$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	
5. $f(x) = -x^2(x-2)(x+1)$			$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	

4)



5)



Function	$n$ degree	$a$ Lead coef.	End Behavior (use $n$ and $a$ )	x-intercepts
6. $f(x) = -(x-1)^2(x+3)$			$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	
7. $f(x) = (x+2)(x-3)(x-1)$			$x \rightarrow -\infty \quad y \rightarrow$ $x \rightarrow \infty \quad y \rightarrow$	

6.  $f(x) = -(x-1)^2(x+3)$

7.  $f(x) = (x+2)(x-3)(x-1)$



Now state the intervals where the function is above (positive) or below (negative) the x-axis. Use inequality notation.

above x-axis (function is positive)

\_\_\_\_\_

below x-axis (function is negative)

\_\_\_\_\_

above x-axis (function is positive)

\_\_\_\_\_

below x-axis (function is negative)

\_\_\_\_\_