Math 3 Unit 3 Worksheet 1 **Name:**_____
End Behavior of Polynomial Functions **Date:**_____ **Per:**_____

Identify the leading coefficient, degree, and end behavior.

1. $f(x) = 5x^2 + 7x - 3$
   Degree:
   Leading Coeff:
   End Behavior:

2. $y = -2x^2 - 3x + 4$
   Degree:
   Leading Coeff:
   End Behavior:

3. $g(x) = x^3 - 9x^2 + 2x + 6$
   Degree:
   Leading Coeff:
   End Behavior:

4. $y = -7x^3 + 3x^2 + 12x - 1$
   Degree:
   Leading Coeff:
   End Behavior:

5. $h(x) = -2x^7 + 5x^4 - 3x$
   Degree:
   Leading Coeff:
   End Behavior:

6. $g(x) = 8x^3 + 4x^2 + 7x^4 - 9x$
   Degree:
   Leading Coeff:
   End Behavior:

Identify the end behavior. Justify your answer.

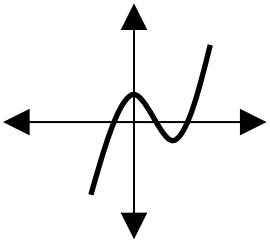
7. $f(x) = 4x^5 - 3x^4 + 2x^3$

8. $y = -x^4 + x^3 - x^2 + 1 - 1$

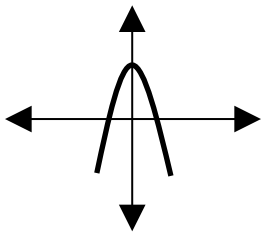
9. $h(x) = 3x^6 - 7x^4 - 2x^9$

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient. Justify your answer.

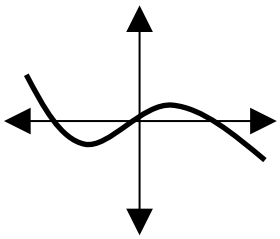
10.
deg:
coeff:
justify:



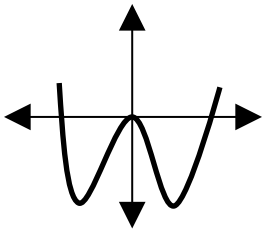
11.
deg:
coeff:
justify:



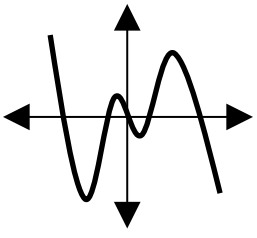
12.
deg:
coeff:
justify:



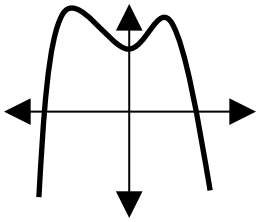
13.
deg:
coeff:
justify:



14.
deg:
coeff:
justify:



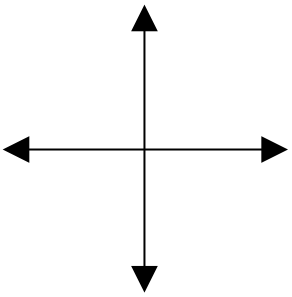
15.
deg:
coeff:
justify:



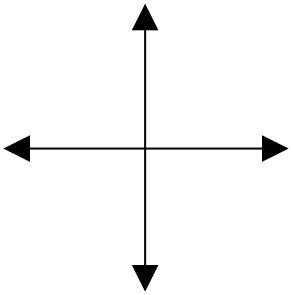
16. Write a polynomial function with end behavior of:
on the left $f(x)$ goes to + ∞ and on the right $f(x)$ goes to $-\infty$.

17. Write a polynomial function with end behavior of:
on the left $f(x)$ goes to + ∞ and on the right $f(x)$ goes to $+\infty$.

18. Sketch a graph of a polynomial function with a negative lead coefficient and an even degree.



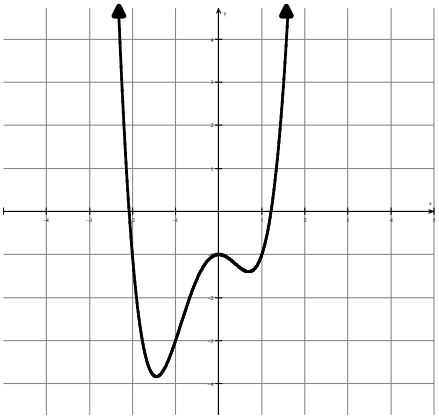
19. Sketch a graph of a polynomial function with a positive lead coefficient and an odd degree.



20. The equation of the polynomial function to the right is

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

Write an equation for a translation of $f(x)$ that has no x-intercepts.
(If not possible, explain why.)



21. The equation of the polynomial function to the right is

$$g(x) = -2x^3 + 2x^2 + 4x$$

Write an equation for a translation of $g(x)$ that has no x-intercepts.
(If not possible, explain why.)