

# MA 114 - Reading Assignment 12 - Section 3.2 - Spring 2008

And the next American Idol is \_\_\_\_\_!

1. Why are polynomials used to approximate other, more complicated functions?

2. What is the degree of the polynomial  $f(x) = 3x + 5 - 7x^3 + 3x^2$ ? \_\_\_\_\_

3. Every polynomial is \_\_\_\_\_, meaning the graph has no sharp corners or cusps, and is continuous, meaning the graph has no gaps or holes.

4. Fill in the properties of the power function  $f(x) = ax^n$ .

$n$ even	$n$ odd
Symmetric with respect to the _____	Symmetric with respect to the _____
Domain _____	Domain _____
Graph always contains the points _____, _____, and _____	Graph always contains the points _____, _____, and _____

5. **True** or **False**: If  $r$  is a root of  $f$ , then  $(r, 0)$  is an  $x$ -intercept of  $f$ .

6. If  $(x - r)^m$  is a factor of a polynomial  $f$  and  $(x - r)^{m+1}$  is not a factor of  $f$ , then  $r$  is called a zero of \_\_\_\_\_ of  $f$ .

7. **True** or **False**: If  $m$  is even,  $(x - r)^m$  is a factor of  $f$  and  $(x - r)^{m+1}$  is not a factor of  $f$ , then the graph of  $f$  crosses the  $x$ -axis at  $x = r$ .

8. At most how many turning points does the polynomial  $f(x) = 5x^7 + 6x^4 - 9x^2 + 3x - 1$  have?  
\_\_\_\_\_

9. For large  $|x|$ , what power function does  $f(x) = 5x^7 + 6x^4 - 9x^2 + 3x - 1$  resemble? \_\_\_\_\_