

## Graphing Polynomial Functions: Basic Shape

Describe the end behavior of each function.

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

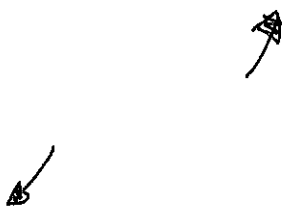
2)  $f(x) = x^3 - 4x^2 + 4$



Opposite directions b/c deg is odd  
 Right side up because leading coefficient is (+)

3)  $f(x) = x^3 - 9x^2 + 24x - 15$

4)  $f(x) = x^2 - 6x + 11$

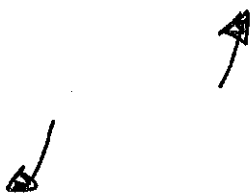


Deg even, so both sides go in same direction

Leading coef. (+) so right side goes up

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

6)  $f(x) = -x^2 + 4x$



Leading coefficient is neg so right side goes down  
 degree is even, so both sides go in the same direction

7)  $f(x) = 2x^2 + 12x + 12$

8)  $f(x) = x^2 - 8x + 18$



State the maximum number of turns the graph of each function could make.

9)  $f(x) = x^5 - 4x^3 + 5x + 1$

10)  $f(x) = -x^2 - 1$

$$5 - 1 = 4$$

$$2 - 1 = 1$$

Sketch the general shape of each function.

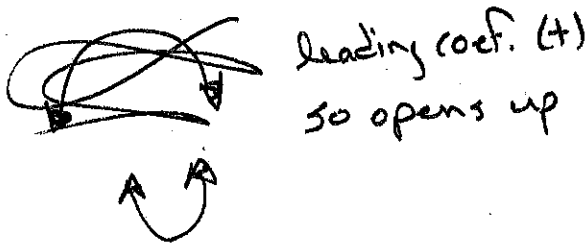
11)  $f(x) = -x^2 - 6x - 7$



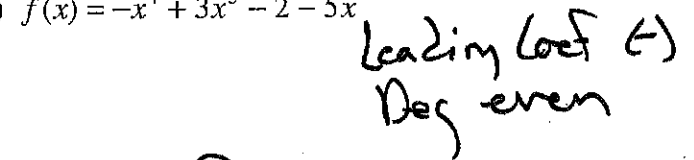
12)  $f(x) = x^3 - 2x^2 + 1$



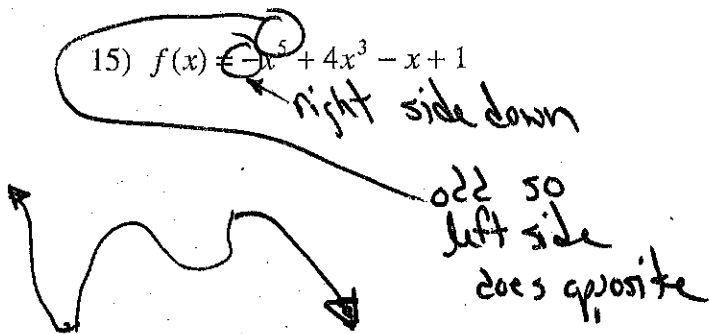
13)  $f(x) = x^2 + 2$



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



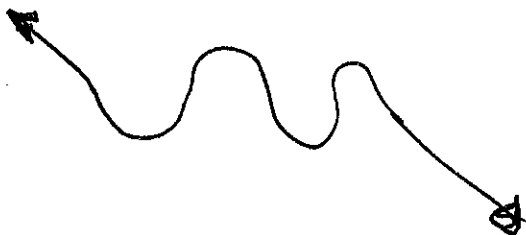
15)  $f(x) = -x^5 + 4x^3 - x + 1$



16)  $f(x) = x^3 - 2x^2 - 3$



17)  $f(x) = -x^5 + 3x^3 + 2$



18)  $f(x) = -x^3 + 10x^2 - 33x + 32$

