GRAPHING POLYNOMIAL FUNCTIONS: BASIC SHAPE

Name_____ Date _____ Period _____

Describe the end behavior of each function using symbolic notation.

As $x \to +\infty, f(x) \to +\infty$.
As $x \to -\infty, f(x) \to -\infty$.

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

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

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

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

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

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

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

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Sketch the general shape of each function by finding the zeros and the number of turns.

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