Algebra 2   Name_____

Synthetic Division and End Behavior

Date_____ Period_____

Use synthetic division to divide the polynomials.

1) $(a^3 - a^2 - 38a - 41) \div (a + 5)$

2) $(x^3 + 4x^2 + 2x + 39) \div (x + 5)$

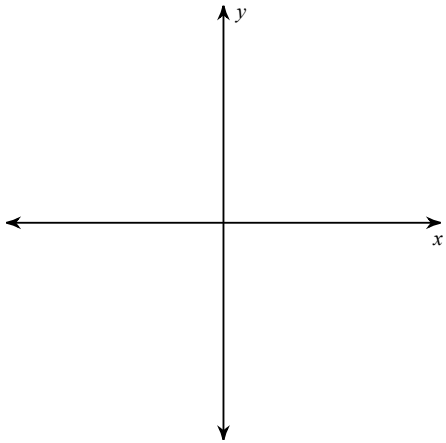3) $(x^3 + 11x^2 + 14x - 15) \div (x + 2)$

4) $(k^3 + 5k^2 - 8) \div (k + 5)$

Sketch the general shape of each function. Then state the end behavior.

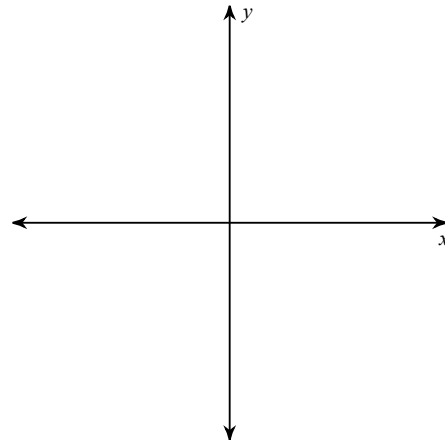5) $f(x) = -x^3 + x^2 - 1$

as $x \to +\infty$, $y \to$ _____

as $x \to -\infty$, $y \to$ _____

6) $f(x) = -9x^7 + 8x^4 - 6x^2 + 12$

as $x \to +\infty$, $y \to$ _____

as $x \to -\infty$, $y \to$ _____

7) $f(x) = 14x^9 - 8x^7 - 6x^3 + 14$

as $x \to +\infty$, $y \to$ _____

as $x \to -\infty$, $y \to$ _____

8) $f(x) = 13x^7 - 8x^4 + 6x^2 - 5$

as $x \to +\infty$, $y \to$ _____

as $x \to -\infty$, $y \to$ _____

9) $f(x) = -9x^8 + 7x^5 - 4x^2 + 5$

as $x \rightarrow +\infty$, $y \rightarrow$ _____

as $x \rightarrow -\infty$, $y \rightarrow$ _____

10) $f(x) = -10x^{12} + 7x^9 - x^7 + 7x^2$

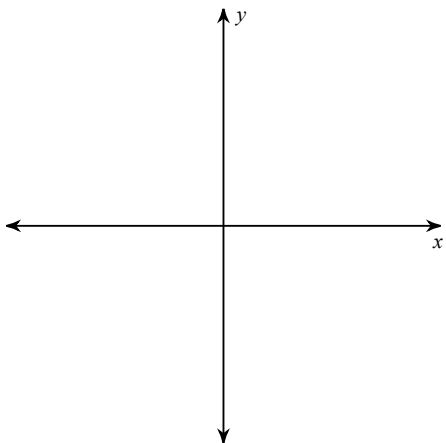as $x \rightarrow +\infty$, $y \rightarrow$ _____

as $x \rightarrow -\infty$, $y \rightarrow$ _____

11) $f(x) = 11x^{14} + 8x^6 - 7x^4 - 3$
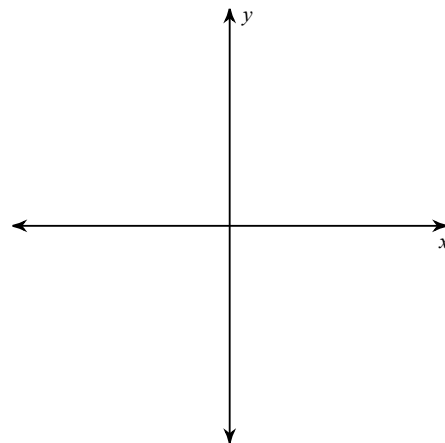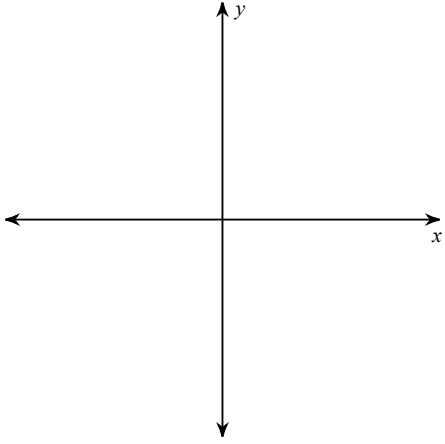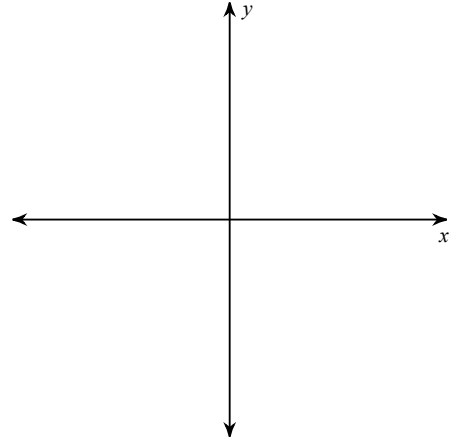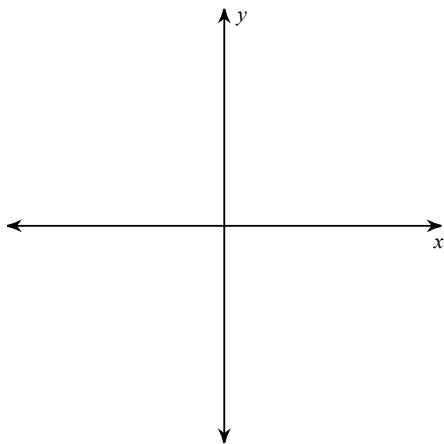
as $x \rightarrow +\infty$, $y \rightarrow$ _____

as $x \rightarrow -\infty$, $y \rightarrow$ _____

12) $f(x) = 5x^4 + 9x^2 - 7x + 5$

as $x \rightarrow +\infty$, $y \rightarrow$ _____

as $x \rightarrow -\infty$, $y \rightarrow$ _____