Name: _____

Polynomials and Synthetic Division

1) Use long division to find the quotient and the remainder.

1) $\frac{x^2-6x+11}{x-2}$

2) $\frac{x^2+5x+12}{x+3}$

3) $\frac{x^2+7x-2}{x+1}$

4) $\frac{x^2-6x-5}{x-4}$

5) $\frac{x^3-2x^2-19x-12}{x+3}$

6) $\frac{x^3-2x^2-22x+33}{x-5}$

7) $\frac{6x^3+5x^2+6x-12}{2x-1}$

8) $\frac{12x^3+13x^2-22x-14}{3x+4}$

9) $\frac{2x^3+13x^2+28x+21}{x^2+3x+1}$

10) $\frac{x^4-7x^3+4x^2-42x-12}{x^2-7x-2}$

11) $\frac{2x^5+32x^4+3x^3+44x^2-14}{4x^2+6}$

12) $\frac{10x^8+20x^6+x^4+2x^3+28x^2+4}{2x^4+6x^2+3}$

13) $\frac{3x^4-x^3-15}{x^2+5}$

14) $\frac{3x^5-4x^3-2x+7}{x^2-2x}$

2) Divide the polynomial $p(x)$ by the polynomial $g(x)$ and find the quotient and remainder:

(1) $p(x) = x^3 - 3x^2 + 5x - 3$, $g(x) = x^2 - 2$

(2) $p(x) = x^4 - 3x^2 + 4x + 5$, $g(x) = x^2 + 1 - x$

(3) $p(x) = x^4 - 5x + 6$, $g(x) = 2 - x^2$

3) Use synthetic division to find the quotient and the remainder.

1) $\frac{x^2-8x+4}{x-10}$

2) $\frac{x^2-4x-6}{x+3}$

3) $\frac{3x^3+13x^2-6x+28}{x+5}$

4) $\frac{2x^3-x^2-31x}{x-4}$

5) $\frac{x^4+3x^2-4}{x+1}$

6) $\frac{2x^5+3x^4-7x+8}{x-1}$

7) $\frac{3x^4-11x^3-27x^2+18x+10}{x-5}$

8) $\frac{2x^4+3x^3-18x^2+5x-12}{x-2}$

9) $\frac{x^3+8}{x+2}$

10) $\frac{x^4-81}{x+3}$

11) $\frac{4x^3-7x+5}{x-\frac{1}{2}}$

12) $\frac{6x^4+x^3-10x^2+9}{x-\frac{1}{3}}$