Name:_____

Date:_____

Math 12

Polynomials Quiz – Part 2

1. Use the remainder theorem to determine the remainder of each division.
   a) $x^3 + 9x^2 - 5x + 3 \div x - 2$
   b) $12x^3 + 13x^2 - 23x + 7 \div x - 2$

2. Perform each division using the indicated method. Express the result in the form $\frac{P(x)}{x-a} = Q(x) + \frac{R}{x-a}$.
   a) $x^3 + 9x^2 - 5x + 3 \div x - 2$ using long division.
   b) $12x^3 + 13x^2 - 23x + 7 \div x - 2$ using synthetic division.

3. Determine the value of *m* and *n* such that when $f(x) = x^4 + mx^3 - nx - 5$ is divided by $x - 3$, the remainder is -14. When $f(x)$ is divided by $x - 2$ the remainder is -19.

4. Which binomials are factors of the polynomial $P(x) = x^3 - x^2 - 16x + 16$?
   a) $x - 1$
   b) $x + 1$
   c) $x + 4$
   d) $x - 4$

5. Factor fully.

a) $x^3 - 4x^2 + x + 6$

b) $x^4 - 4x^3 - x^2 + 16x - 12$