Name : _____ Score : _____

Teacher : _____ Date : _____

The Remainder Theorem

Evaluate each polynomial at the given value of x.

1) $f(x) = (x^4 - 2x^3 - 18x^2 + 6x + 45)$ at $x = 0$

2) $f(x) = (x^4 + 8x^3 + 18x^2 + 24x + 45)$ at $x = -1$

3) $f(x) = (x^4 - 20x^2 - 125)$ at $x = -1$

4) $f(x) = (x^5 + 3x^4 - 4x - 12)$ at $x = 2$

Determine whether each binomial is a factor of the given polynomial.

5) $(x^4 - 6x^3 + 7x^2 + 12x - 18) \div (x - 2)$

6) $(x^4 + 9x^3 + 23x^2 + 27x + 60) \div (x + 6)$

7) $(x^4 - 2x^2 - 8) \div (x - 3)$

8) $(x^5 + 4x^4 - 4x - 16) \div (x + 4)$

Divide each polynomial by the given binomial.

9) $(x^4 - x^3 - 15x^2 + 3x + 36) \div (x - 3)$

10) $(x^4 + 9x^3 + 23x^2 + 27x + 60) \div (x + 3)$

11) $(x^4 - 2x^2 - 8) \div (x - 2)$

12) $(x^5 - 2x^4 - 25x + 50) \div (x - 3)$