Name: _____

Polynomials and Synthetic Division

Exercise 1: Find the remainder.

1) $f(x)=5x^5+3x^2-7x+12$ is divided by $(x+2)$

2) $f(x)=x^3-4x^2+x+2$ is divided by $(x-7)$

3) $f(x)=2x^4+4x^2+20$ is divided by $(x+6)$

4) $f(x)=3x^5+7x-9$ is divided by $(x-7)$

5) $f(x)=6x^8+8x^6$ is divided by $(x-4)$

6) $f(x)=10x^7-9x^6+x^4+6x^2-11$ is divided by $(x-12)$

7) $f(x)=x^3-8x^2-4x-10$ is divided by x

Exercise 2: Find the quotient and the remainder in two different ways.

1) $\dfrac{x^4+x^3+x+6}{x+5}$

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

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

4) $\dfrac{4x^3-6x^2-2x-11}{x-9}$

5) $\dfrac{5x^3-8x^2-7x-9}{x-3}$

6) $\dfrac{x^3+6x^2+x+6}{x+3}$

Exercise 3: The area of a rectangle is ($2x^2 - 11x + 15$) square feet. The length of the rectangle is (2x – 5) feet. What is the width of the rectangle?

Exercise 4: The area of a rectangle is ($x^3 + 8x^2 + 13x - 12$) square units. The width of the rectangle is (x + 4) units. What is the length of the rectangle?

Exercise 5: The area of a triangle is ($15x^4 + 3x^3 + 4x^2 - x - 3$) square meters. The length of the base of the triangle is ($6x^2 - 2$) meters. What is the height of the triangle relative to the given base?

Exercise 6: Find the remainder when $p(x) = x^{15} + 3x^{10} + 2$ is divided by $x - 1$

Exercise 7: Find the quotient and remainder when the first polynomial is divided by the second.

$x^3 - 2x - 18; x - 2$

Exercise 8: Determine whether x –2 or x+2 is a factor of $x^5 - 3x^2 - 20$

Exercise 9: When a polynomial p(x) is divided by x+3, the quotient is $2x^2 - 3x + 9$ and the remainder is -11. Find p(x).