

Name: _____

Division of Polynomial Functions

- 1) Write each rational expression as a polynomial plus a fraction. The degree of the numerator of this fraction should be less than the degree of the denominator.

1) $\frac{x}{x+4}$

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

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

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

- 2) Perform each division and write the answer in the form of:

$$\text{Quotient} + \frac{\text{remainder}}{\text{divisor}}.$$

1) $\frac{2x^3 - 21x^2 + 9x - 200}{x - 11}$

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

3) $\frac{x^3}{x+1}$

4) $\frac{3x}{5-x}$

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

6) $\frac{x^4 + x}{x^2 + 1}$

3) Divide the denominator into the numerator using synthetic division. Give the quotient and the remainder.

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

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

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

$\frac{5x^2 - x - 10}{x + 4}$

4) Divide $5x^3 - 6x + 2x^5 + 7 + 4x^4$ by $2 + x^3 + x^2$

5) Divide $12x^3 - 30x^2 - 4x + 35$ by $2x - 4$

6) Fill in the missing polynomials to complete the long division

1)	$ \begin{array}{r} 6x^2 - \quad + 1 \\ x - 2 \overline{) 6x^3 - 17x^2 + 11x - 2} \\ \underline{ - 5x^2 + 11x} \\ \underline{ x - 2} \end{array} $
2)	$ \begin{array}{r} x^2 + 2x \overline{) 3x^3 - 2x^2 + 4x + 7} \\ \underline{ 20x + 7} \end{array} $
3)	$ \begin{array}{r} - 6x - \\ x - 1 \overline{) x^3 - 7x^2 + 0x + 4} \\ \underline{ - 6x^2 + 6x} \\ \underline{ - 6x + 6} \end{array} $