

# Dividing Polynomials

When you divide 2 polynomials, start by factoring the numerator & denominator.

Then cancel any common factors

You can also use polynomial division (either long division or the box method)

Examples 1)  $\frac{x^2 - 4x - 12}{x - 6} = \frac{(x+2)(\cancel{x-6})}{\cancel{x-6}} = x+2$

2)  $\frac{x^2 - 9x - 10}{x+1} = \frac{(x-10)(\cancel{x+1})}{\cancel{x+1}} = x-10$

3)  $\frac{x^6 - 1}{x^3 - 1} = \frac{(\cancel{x^3-1})(x^3+1)}{\cancel{x^3-1}} = x^3+1$

4)  $\frac{x^3 - 16x}{x^3 + 6x^2 + 8x} = \frac{\cancel{x}(x^2 - 16)}{\cancel{x}(x^2 + 6x + 8)} = \frac{(x+4)(x-4)}{(x+4)(x+2)}$

Exercises:

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

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

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