7A Cancelling Algebraic Fractions

1. Simplify the following fractions

a) $\frac{7x^4-2x^3+6x}{x}$

b) $\frac{(x+7)(2x-1)}{(2x-1)}$

c) $\frac{x+3}{x^2+7x+12}$

d) $\dfrac{x^2+6x+5}{x^2+3x-10}$

e) $\dfrac{2x^2+11x+12}{(x+3)(x+4)}$

7B Polynomial Division

1. Divide $x^3 + 2x^2 - 17x + 6$ by $(x - 3)$

2. Given that $f(x) = 4x^4 - 17x^2 + 4$, write $f(x)$ in the form:

   $f(x) = (2x + 1)(ax^3 + bx^2 + cx + d)$

3. Find the remainder when $2x^3 - 5x^2 - 16x + 10$ is divided by $(x - 4)$

7C The Factor Theorem

1. Show that $(x-2)$ is a factor of x^3+x^2-4x-4 by:

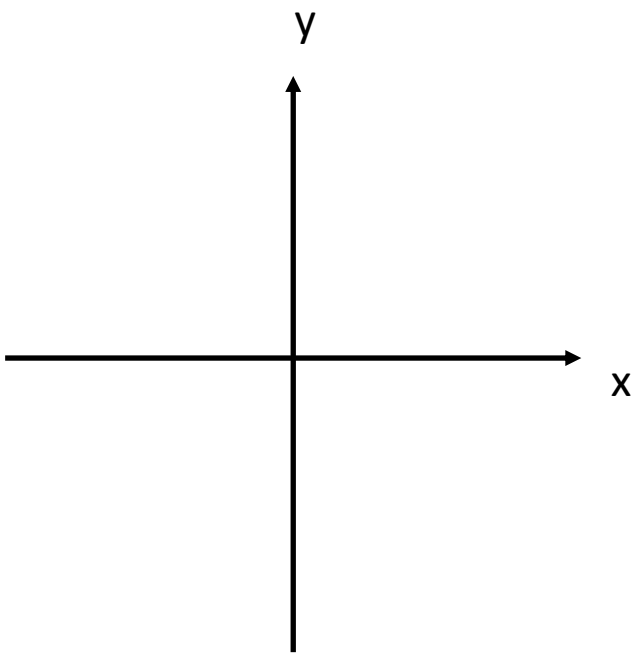
a) Algebraic division

b) The factor theorem

2.

a) Fully factorise $2x^3 + x^2 - 18x - 9$

b) Hence, sketch the graph of $y = 2x^3 + x^2 - 18x - 9$



3. Given that $(x + 1)$ is a factor of $4x^4 – 3x^2 + a$, find the value of a.