

7.2) Dividing polynomials

Worked example

Divide $x^3 - 2x^2 - 17x + 10$ by $(x - 5)$

Your turn

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

$$x^2 + 5x - 2$$

Worked example

$$f(x) = 18x^4 - 29x^2 + 3$$

Divide $f(x)$ by $(3x + 1)$.

Give your answer in the form

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

Your turn

$$f(x) = 4x^4 - 17x^2 + 4$$

Divide $f(x)$ by $(2x + 1)$.

Give your answer in the form

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

$$f(x) = (2x + 1)(2x^3 - x^2 - 8x + 4)$$

Worked example

Find the remainder when

$2x^3 + 5x^2 - 10x + 16$ is divided by $(x - 2)$

Your turn

Find the remainder when

$2x^3 - 5x^2 - 16x + 10$ is divided by $(x - 4)$

-6

Worked example

Divide $27x^3 - 8$ by $3x - 2$

Your turn

Divide $8x^3 - 1$ by $2x - 1$

$$4x^2 + 2x + 1$$

Worked example

$$f(x) = 6x^3 + 11x^2 - 46x + 24$$

Show that $(3x - 2)$ is a factor of $f(x)$ and hence find all the real roots of the equation $f(x) = 0$

Your turn

$$f(x) = 12x^3 - 14x^2 - 61x + 60$$

Show that $(2x - 3)$ is a factor of $f(x)$ and hence find all the real roots of the equation $f(x) = 0$

$$x = -\frac{5}{2}, x = \frac{3}{2}, x = \frac{4}{3}$$