

## Chapter 6 Polynomials: Assignment

Name \_\_\_\_\_

1 Sketch the graphs of each of the following and label the axes intercepts:

a  $y = (x + 2)^3 + 5$

b  $y = 2(x - 1)^3 + 2$

c  $y = -2(x + 2)^3 + 6$

2 Sketch the graphs of each of the following. Label the axes intercepts and the turning points.

a  $y = (x + 1)^4 + 3$

b  $y = -2(x - 1)^4 + 2$

3 Divide  $x^3 + 2x^2 - 3x + 6$  by  $x - 2$ .

4 Use the remainder theorem to find the remainder when the polynomial

$P(x) = x^3 + 2x^2 - x + 3$  is divided by:

a  $x - 3$

b  $2x - 1$

c  $2x + 1$

5 Find the value of  $a$  in the polynomial  $ax^3 + 2x^2 + 3$ , if the remainder is 3 when the polynomial is divided by  $x - 2$ .

6 Factorise each of the following polynomials:

a  $2x^3 + 5x^2 - x - 6$

b  $2x^3 + x^2 - 7x - 6$

c  $2x^4 - x^3 - 8x^2 + x + 6$

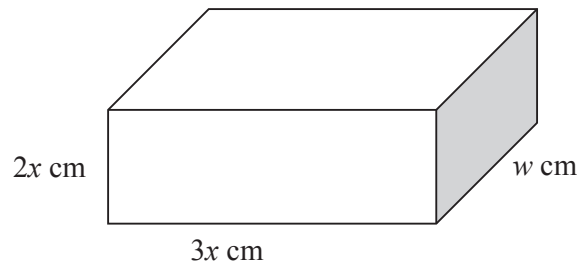
7 Solve each of the following equations for  $x$ :

a  $2x^3 + 5x^2 - x - 6 = 0$

b  $2x^4 - x^3 - 8x^2 + x + 6 = 0$

8 The rule for a cubic function is of the form  $y = ax^3 + bx$ . The graph passes through the points (2, 0) and (5, 6). Find the values of  $a$  and  $b$ .

9 A piece of wire 2000 cm long is used to make the edges of a cuboid with dimensions as shown.



a Find  $w$  in terms of  $x$ .

b Find the volume,  $V$  cm<sup>3</sup>, of the cuboid in terms of  $x$ .

c State the possible values of  $x$ .

d Find the volume if  $x = 50$ .

e Use a calculator to find the maximum volume possible.