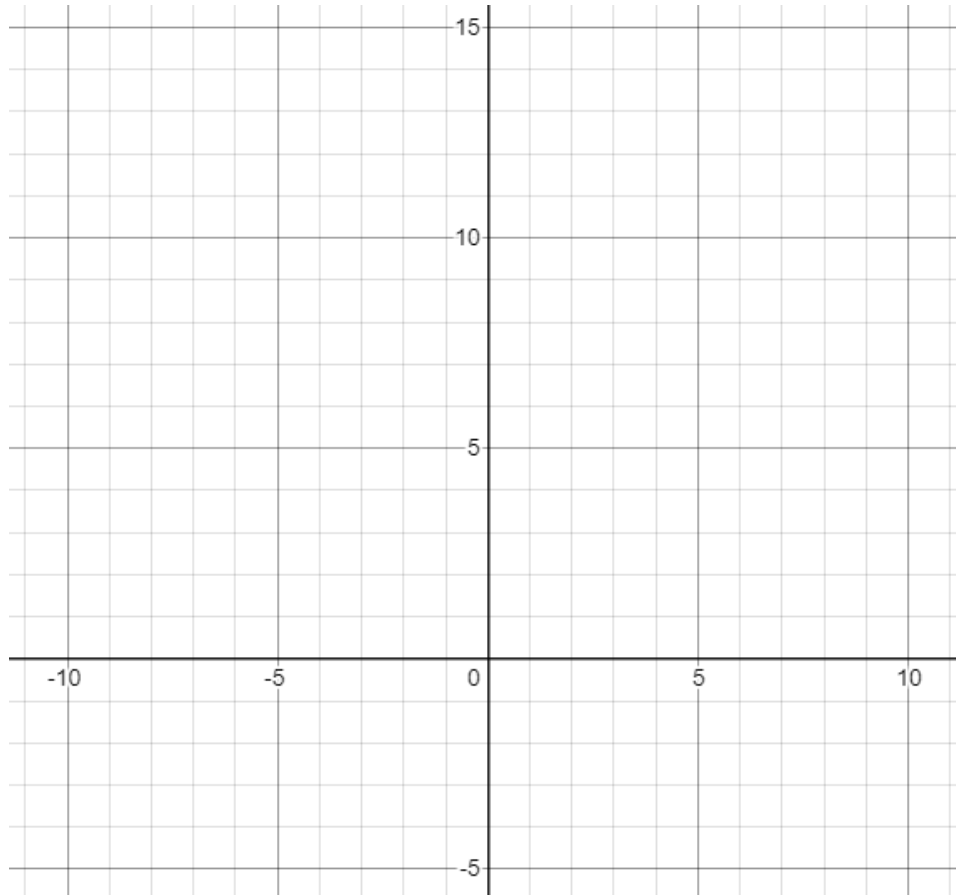


CUBIC POLYNOMIALS

1 Draw the graph of $y = (x + 2)^3$. On your graph, draw the lines $y = 1$, $y = 8$ and $y = 2$. Use this to solve the equations:

(a) $(x + 2)^3 = 0$ (b) $(x + 2)^3 = 1$ (c) $(x + 2)^3 = 8$ (d) $(x + 2)^3 = 2$



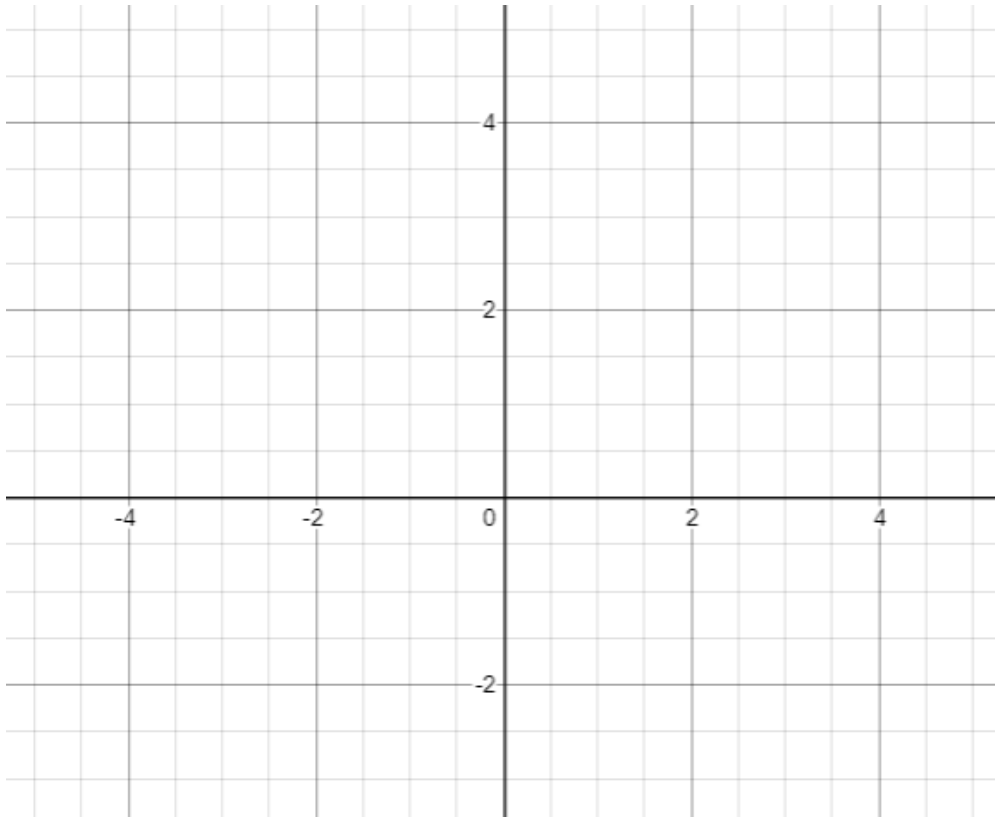
2 Solve the following equations algebraically:

(a) $(x + 2)^3 = 0$ (b) $(x + 2)^3 = 1$ (c) $(x + 2)^3 = 8$

CUBIC POLYNOMIALS

- 3** Draw the graph of $y = (x - 1)(x + 1)(x + 2)$. On your graph, draw the lines $y = -2$ and $y = 4$. Use this to solve the equations:

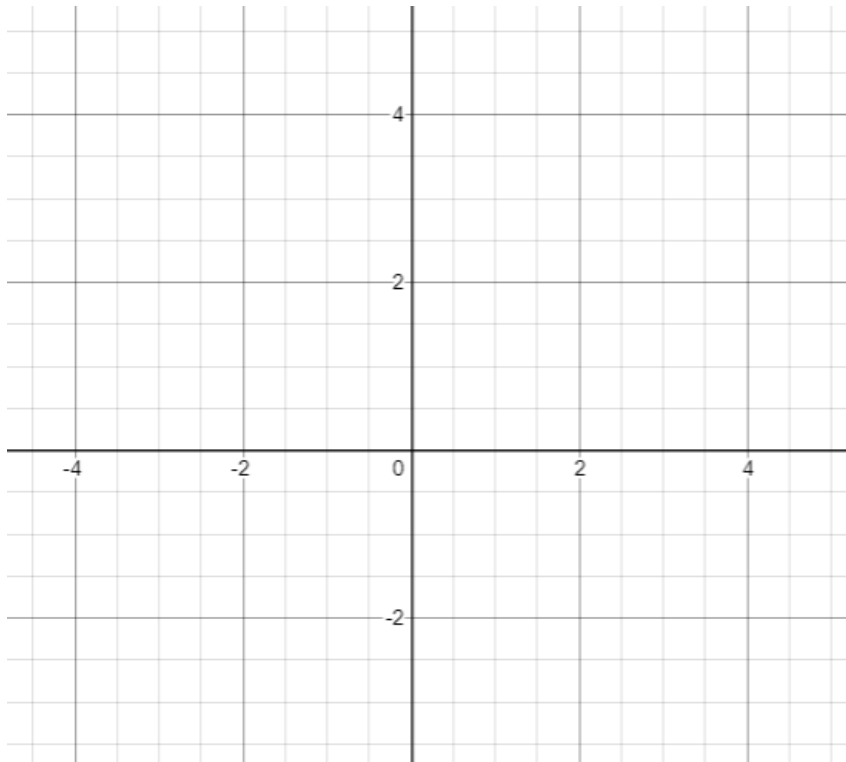
(a) $(x - 1)(x + 1)(x + 2) = 0$ (b) $(x - 1)(x + 1)(x + 2) = -2$ (c) $(x - 1)(x + 1)(x + 2) = 4$



- 5** The line $y = c$ is drawn on the graph in question **3**. For what values of c will the equation $(x - 1)(x + 1)(x + 2) = c$ have three distinct roots? Give your answer to one decimal place.

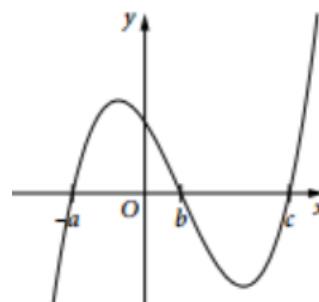
CUBIC POLYNOMIALS

- 6 Draw the graph of $y = (x - 2)^2(1 - x)$. By drawing appropriate lines on your graph, use this to solve the following:
- (a) $(x - 2)^2(1 - x) = 0$ (b) $(x - 2)^2(1 - x) = 4$ (c) $(x - 2)^2(1 - x) = -2$
 (d) For what values of c will the equation $(x - 2)^2(1 - x) = c$ have three distinct roots?
 (e) What is the coefficient of x^3 when $(x - 2)^2(1 - x)$ is expanded?



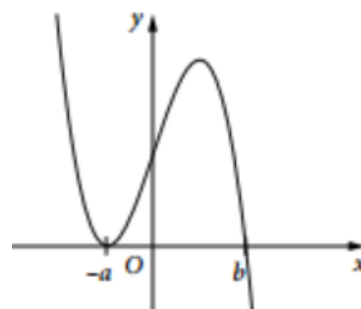
- 7 For $a, b, c > 0$, the equation of the following graph is best represented by:

- A $y = (x - a)(x - b)(x - c)$
 B $y = (x - a)(x + b)(x + c)$
 C $y = (x - a)(x - b)(x + c)$
 D $y = (x + a)(x - b)(x - c)$



- 8 For $a, b > 0$, the equation of the following graph is best represented by:

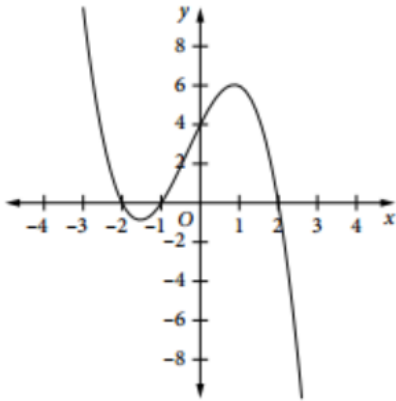
- A $y = (x + a)(x - b)^2$
 B $y = (x + a)^2(b - x)$
 C $y = (a - x)(x + b)^2$
 D $y = (x - a)^2(x + b)$



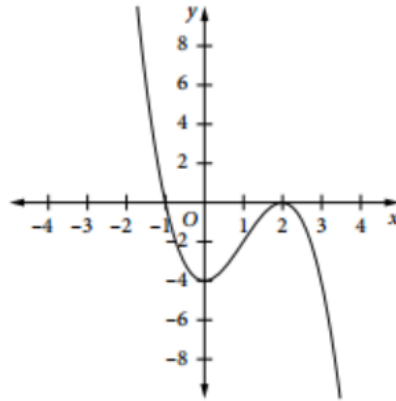
CUBIC POLYNOMIALS

9 If $y = (x + 2)(x + 1)(2 - x)$, which of the following is the graph of this function?

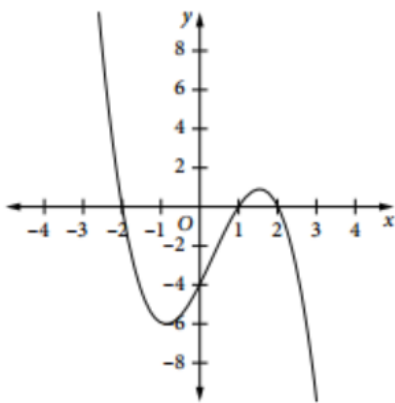
A



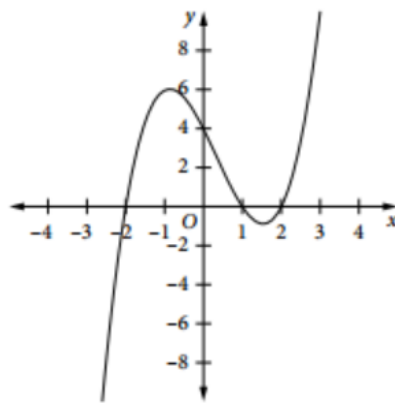
B



C



D



10 Find the equation of the cubic function that cuts the x -axis at $x = -1, 2, 3$ and has a y -intercept of 6.

11 Find the values of a and b if the curve $y = x(x - a)(x + b) + 4$ passes through the points $(1, 0)$ and $(-2, 12)$.