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A LEVEL MATHS

(19) Cubic Graphs

WORKING AT D/E

(1) Sketch the graph of $y = (x - 1)(x + 2)(x - 5)$ showing where the curve crosses the coordinate axes

(2) (a) Show that $x^3 + 2x^2 - 8x$ can be written as $x(x - a)(x - b)$ where a and b are integers.

(b) Hence, sketch the graph of $y = x^3 + 2x^2 - 8x$

(3) Sketch the graph of $y = x(2 + x)(3 - x)$

WORKING AT B/C

(1) (a) Write $x^3 + 4x^2 + 4x$ in the form $x(x + a)^2$ where a is an integer to be found.

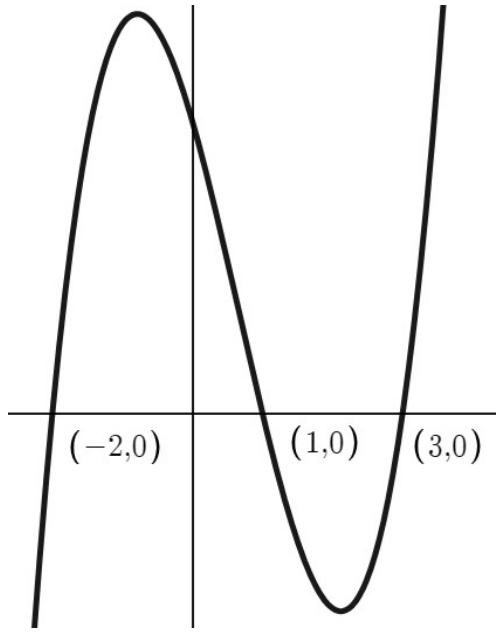
(b) Hence, sketch the graph of $y = x^3 + 4x^2 + 4x$ showing and points where the curve meets or crosses the coordinate axes.

(2) Sketch the graph of $y = -x^3 + x$ showing where the curve crosses the coordinate axes.

(3) Sketch the graph of $y = (2x - 1)^3$

WORKING AT A*/A

(1) The diagram below shows part of the curve with equation $y = 2x^3 + bx^2 + cx + d$



Find the values of the constants b, c and d.

(2) Sketch the graph of $y = x^3 + ax$ where a is a constant and $a > 0$.

(3) Sketch the curve of $y = -ax^3 + bx$ where a and b are positive constants.