

1 Look at the two graphs on the board. Identify which is a graph of the cube function ($f(x) = x^3$) and which is a graph of the cube-root function ($f(x) = \sqrt[3]{x}$).

- a This is the graph of the cube-root function.
b This is the graph of the cube function.

2 Let f be the function given by

$$f(x) = \begin{cases} 2x - 4 & \text{for } -1 \leq x \leq 2, \\ x^3 - 2 & \text{for } 2 < x \leq 3. \end{cases}$$

a What is $f(1)$? (Either show what numerical calculation you make, or show how you get the answer from a graph.)

If $x = 1$, then $-1 \leq x \leq 2$ is true, so $f(x) = 2x - 4$. Therefore,

$$f(1) = 2(1) - 4 = -2.$$

b What is $f(3)$? (Either show what numerical calculation you make, or show how you get the answer from a graph.)

If $x = 3$, then $-1 \leq x \leq 2$ is false, but $2 < x \leq 3$ is (barely) true, so $f(x) = x^3 - 2$. Therefore,

$$f(3) = (3)^3 - 2 = 25.$$

c **Extra credit:** Sketch a graph of f . (Be sure to label the scale.)

