

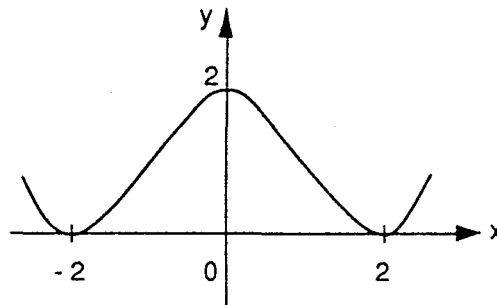
1 $f(x) = 3x^2$ and $g(x) = 2x + 1$.

Work out expressions for the composite functions $f(g(x))$ and $g(f(x))$.

2 For which real values of x are the following functions defined?

$$p(x) = \frac{1}{2x-6} \quad \text{and} \quad q(x) = \sqrt{x^2 - 9}.$$

3 a) The graph of a function $y = h(x)$ for $-3 \leq x \leq 3$ is shown.



On separate sketches, show the graphs of:

(i) $y = h(x) - 2$, and

(ii) $y = -h(x)$.

b) Assuming the graph has no more turns, what type of function do you think $h(x)$ is?

4 $f(x) = \frac{2}{x-1}$

a) Find a formula for $f^{-1}(x)$, the inverses of f and find $f(-1)$ and $f^{-1}(-1)$.

b) Try to find another number with the same property that -1 has in a).