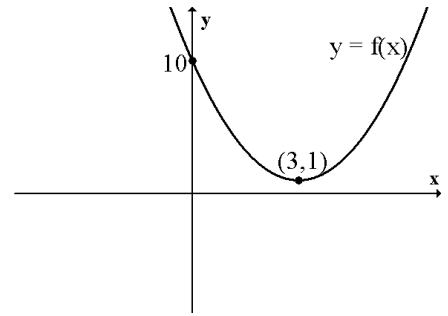
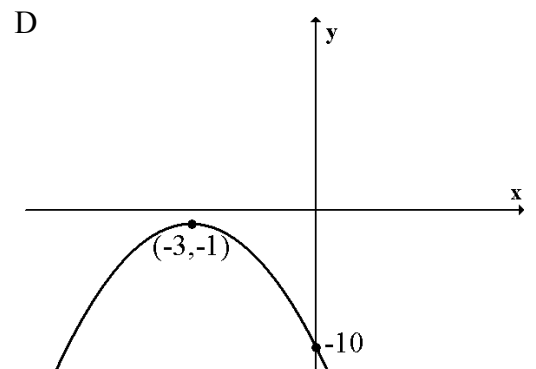
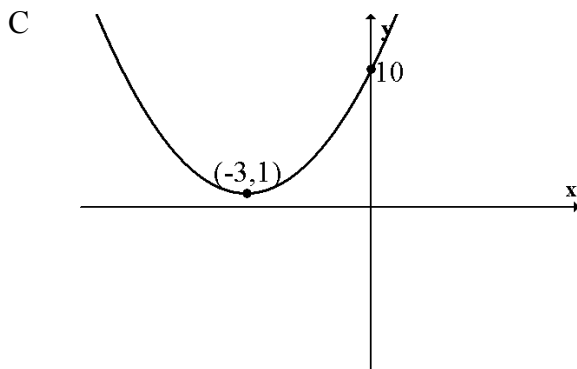
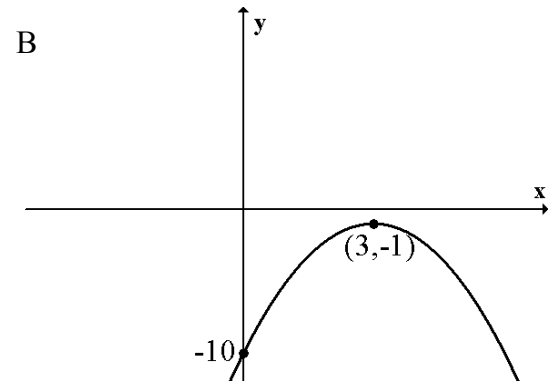
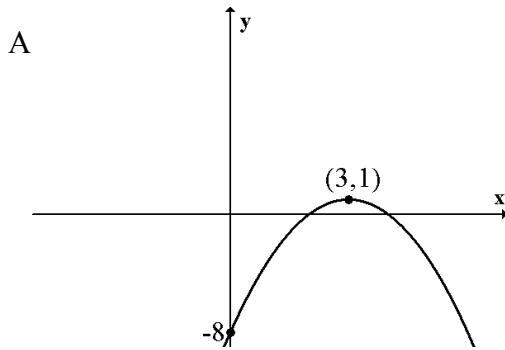


Higher Maths – Homework 2

1. The diagram opposite show the graph of $y = f(x)$.



Which of the following shows the graph of $y = f(-x)$.



2. A function f is defined as $f(x) = \frac{x}{x^2 - 3x - 4}$

An acceptable domain for this function would be

- A $\{x: x \neq 4, x \in \mathbb{R}\}$ B $\{x: x \neq -1, 3, x \in \mathbb{R}\}$ C $\{x: x \neq -3, 1, x \in \mathbb{R}\}$ D $\{x: x \neq -1, 4, x \in \mathbb{R}\}$

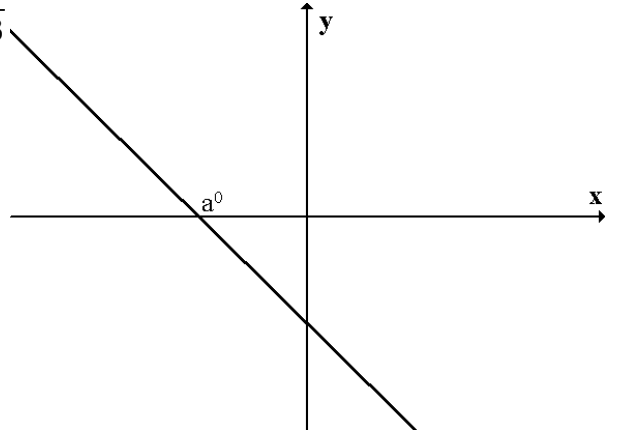
3. The points $A(5, -2)$, $B(2, 2)$ and $C(14, k)$ are collinear. The value of k is

- A -14 B 14 C 18 D -18

4. Find the equation of the line passing through the point $(-2, 3)$ which is perpendicular to the line with equation $4x + 2y - 5 = 0$.

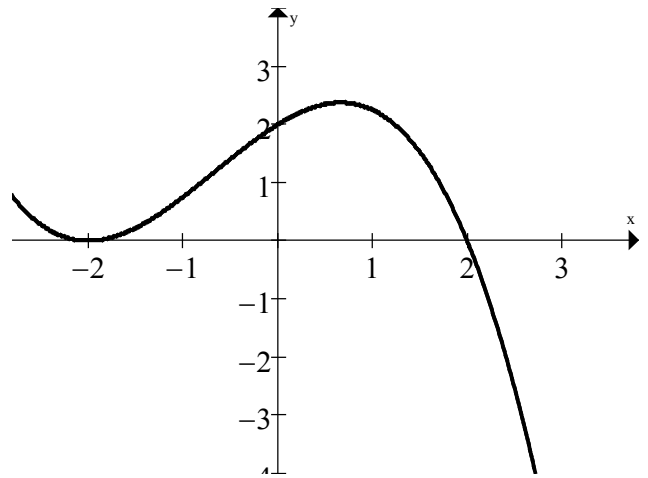
$$\sqrt{3}y + 3x = -4\sqrt{3}$$

5. Find the size of angle a° in the diagram opposite.



6. The diagram shows the graph of $y = f(x)$, where $-2 \leq x \leq 3$.

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



7. Find all the values of x in the interval $0 \leq x \leq 2\pi$ for which $\tan^2 x = 3$.

8. $f(x) = 3 - x$ and $g(x) = \frac{3}{x}$, $x \neq 0$.

- Find $p(x)$ where $p(x) = f(g(x))$.
- If $q(x) = \frac{3}{3-x}$, $x \neq 3$, find $p(q(x))$ in its simplest form.
- State the connection between $p(x)$ and $q(x)$.

9. A triangle has vertices $A(1,1)$, $B(3,5)$ and $C(11,1)$.

- Show that triangle ABC is right angled at B .
- The medians AD and BE intersect at M . Find the equations of AD and BE .
- Find the coordinates of M .

10. $f(x) = 3\cos x - 1$ and $g(x) = x^2 - 4$.

- Find a formula for $g(f(x))$.
- Hence, or otherwise, solve the equation $g(f(x)) = 0$ for $0 \leq x \leq 360$.