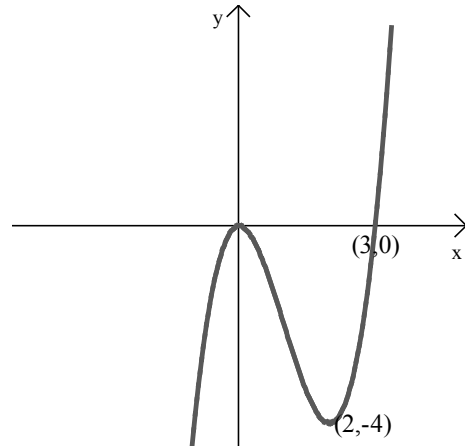


Graphs of Functions

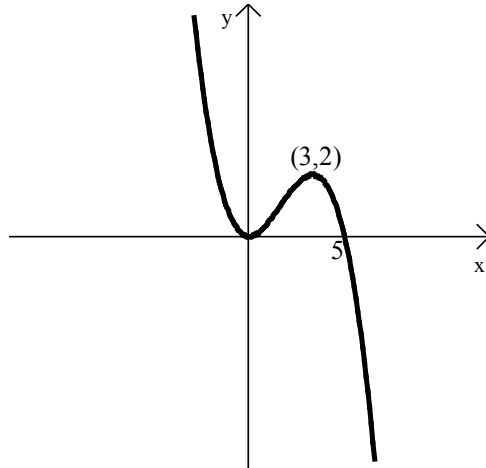
1. The graph of the function $f(x)$ is shown.
On separate diagrams sketch the graphs of

- (i) $f(x) + 3$
(ii) $-f(x)$



2. The diagram shows the graph of $y = f(x)$.

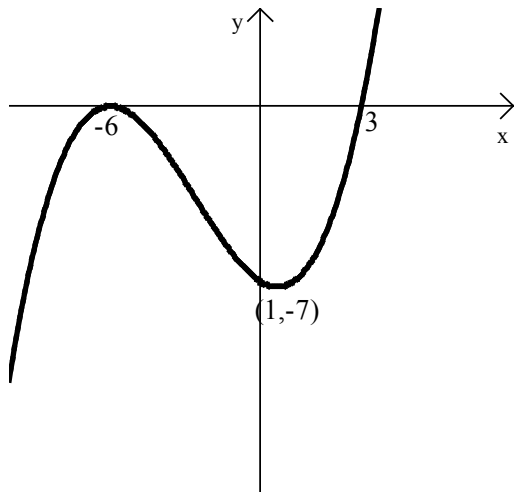
Sketch the graph of $y = 3 - f(x)$.



3. Part of the graph of $y = g(x)$ is shown.

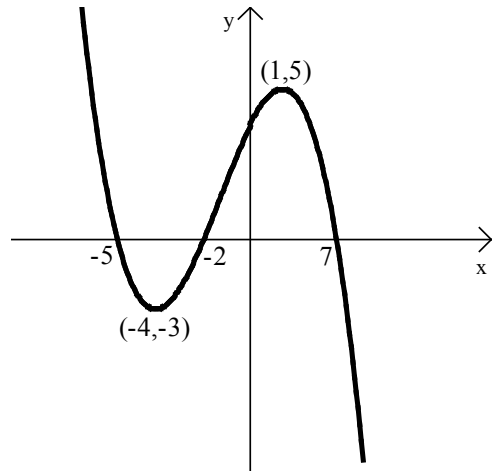
On separate diagrams sketch the graphs of

- (i) $y = -2g(x)$
(ii) $y = g(x - 4)$



4. The graph of $y = g(x)$ is shown.

Sketch the graph of $y = -g(x - 2)$.

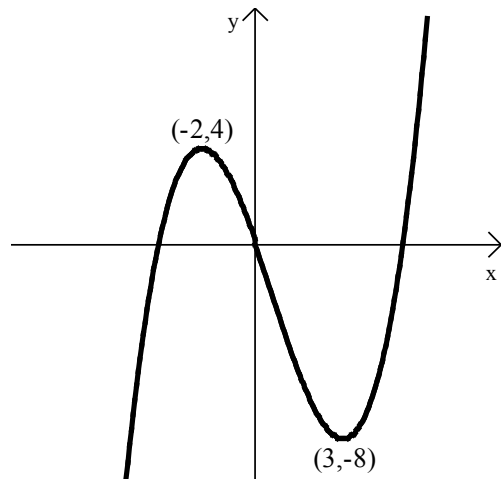


5. The graph of $y = f(x)$ is shown.

On separate diagrams sketch the graphs of

(i) $y = -\frac{1}{2}f(x) + 2$

(ii) $y = f(-x) - 2$

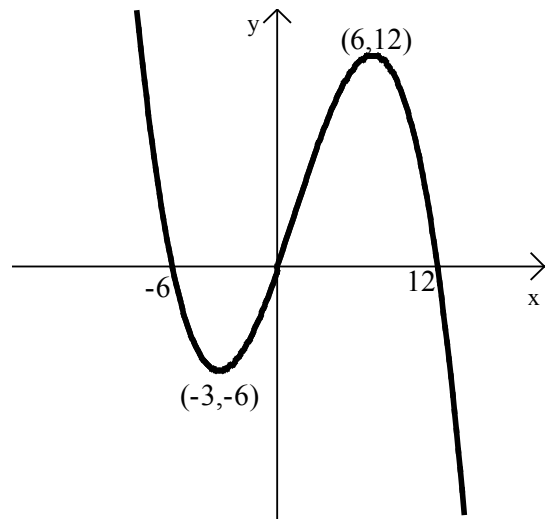


6. The graph of $y = h(x)$ is shown.

On separate diagrams sketch the graphs of

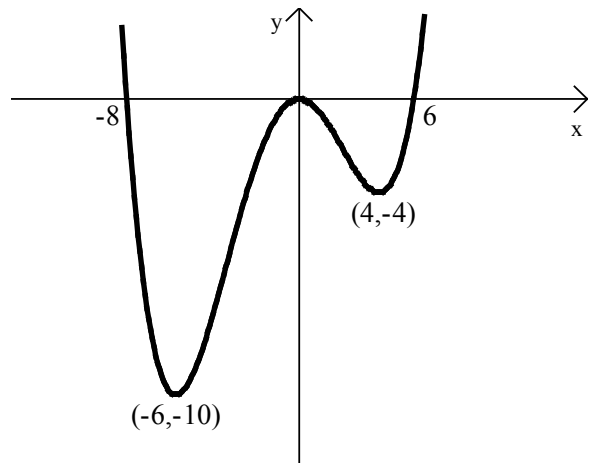
(i) $y = 2h(-x)$

(ii) $y = h(3x) - 1$



7. The diagram shows the graph of $y = f(x)$.

Sketch the graph of $y = f(\frac{1}{2}x) + 3$.



8. (a) $f(x) = x^2 + 4x + 7$. Express $f(x)$ in the form $(x + a)^2 + b$.

(b) Sketch the graph of $y = f(x)$ showing its turning point and where it cuts the y-axis.

(c) Hence sketch the graph of $y = -f(x) + 3$.

9. (a) $f(x) = x^2 - 6x + 1$. Express $f(x)$ in the form $(x - a)^2 - b$.

(b) Sketch the graph of $y = f(x)$.

(c) Hence sketch the graph of $y = f(-x) - 2$.

10. (a) $f(x) = 2x^2 + 8x - 3$. Express $f(x)$ in the form $a(x + b)^2 + c$

(b) Sketch the graph of $y = f(x)$.

(c) Hence sketch the graph of $y = -f(x - 2)$.