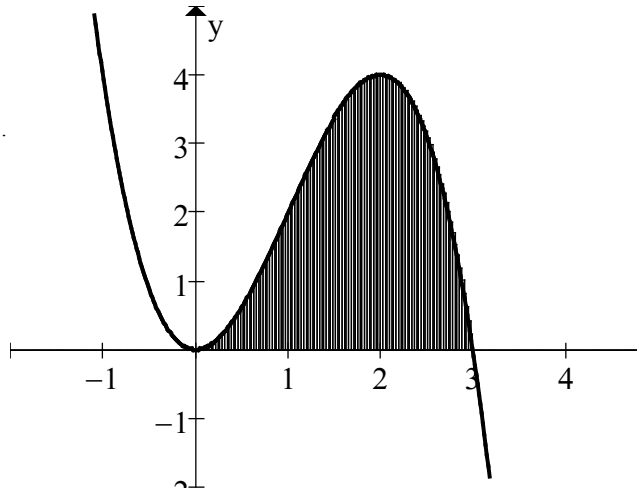
Integration 2

1. Find $\int (2x^2 - 2)(x^2 + 1)\,dx$.

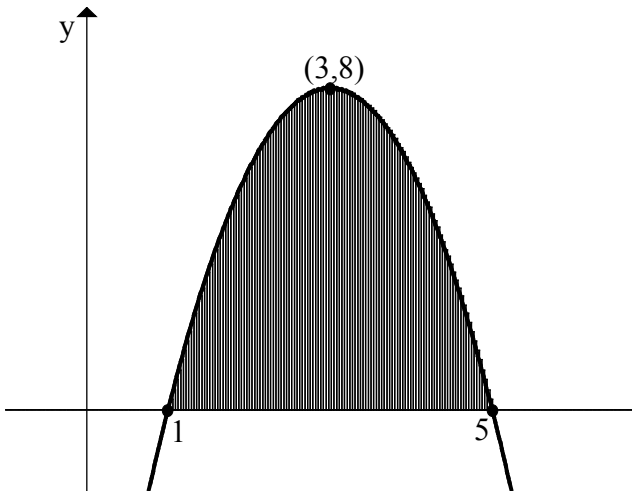
2. Given $\int \frac{10}{(2x-1)^2}\,dx = -6$, find p.

3. The diagram shows part of the graph of $y = 3x^2 - x^3$.
Calculate the shaded area.



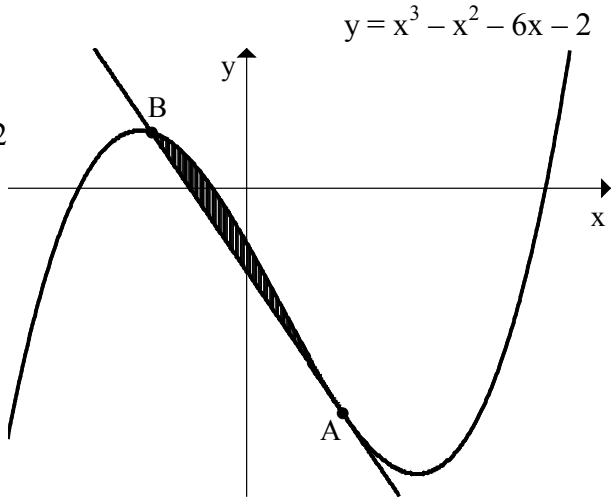
4. (a) f(x) crosses the x-axis at (1,0) and (5,0) and has a maximum turning point at (3,8).
Find a formula for f(x).

(b) Calculate the area under the curve.

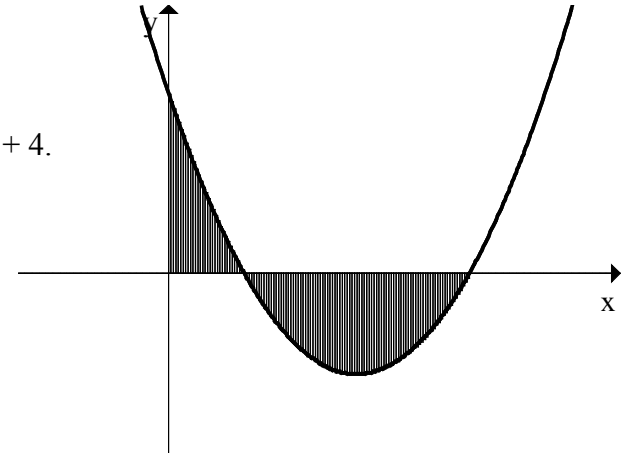


5. The diagram shows the curve $y = x^3 - x^2 - 6x - 2$ and the straight line AB. This line is a tangent to the curve at the point A(1,-8).

(a) Find the equation of this tangent at A.
(b) Find the coordinates of B.
(c) Calculate the shaded area.

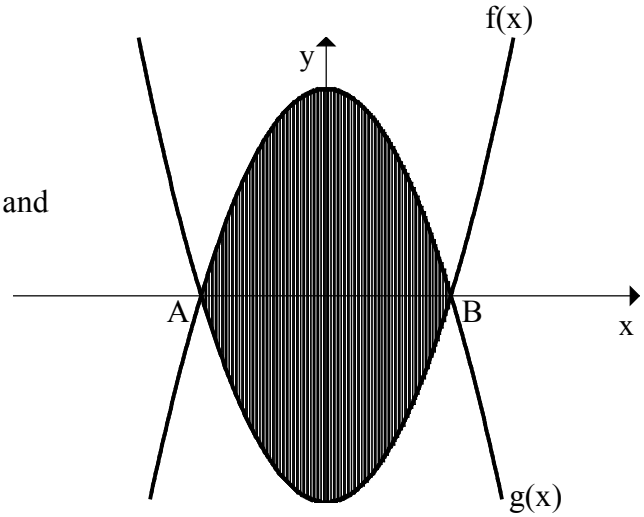


6. The diagram shows the graph of $y = x^2 - 5x + 4$.
   Calculate the shaded area.

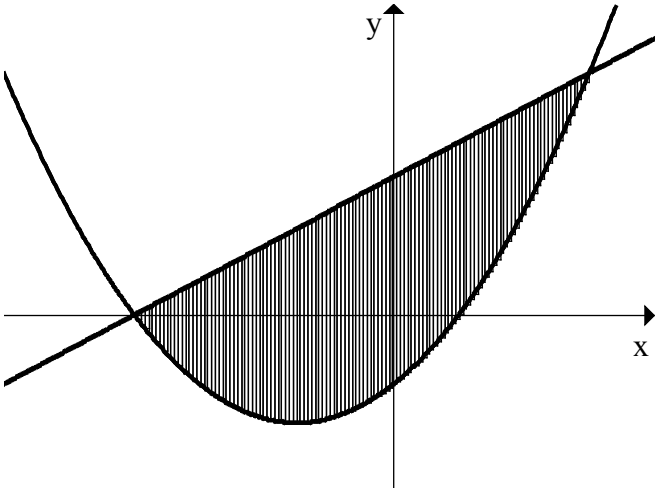


7. The diagram shows the graphs of $f(x) = x^2 - 4$ and $g(x) = 4 - x^2$.

   (a) Find the coordinates of A and B.
   (b) Calculate the shaded area.

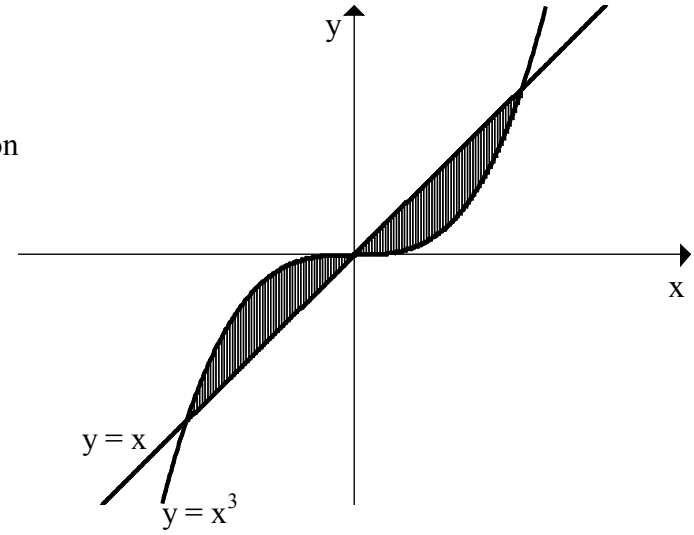


8. The graph shows the line $y = 2x + 8$ and the curve $y = x^2 + 3x - 4$.
   Calculate the area between the line and the curve.



9. The diagram shows the cubic function $y = x^3$ and the line $y = x$.

   Calculate the shaded area.



10. Shown is part of the parabola $y = \frac{1}{2}x^2 + 4$.

    Calculate the shaded area.