AREA BETWEEN TWO CURVES

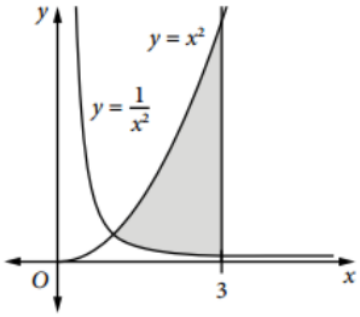
1 Calculate the area of the region bounded by the line $y = 2x$ and the parabola $y = x^2$.

3 The area of the region bounded by the line $y = x + 2$ and the parabola $y = x^2 - 4$ is given by:

A $\int_{-2}^{3}\left(6+x-x^2\right)dx$ **B** $\int_{-3}^{2}\left(6+x-x^2\right)dx$ **C** $\int_{-2}^{3}\left(x^2-x-6\right)dx$ **D** $\int_{-3}^{2}\left(x^2-x-6\right)dx$

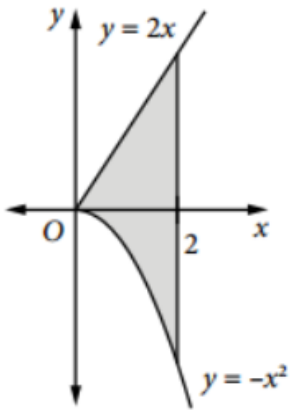
AREA BETWEEN TWO CURVES

4 Calculate the area bounded by $f(x) = x^2$, $g(x) = \frac{1}{x^2}$, $x > 0$, the x-axis and the line $x = 3$.



AREA BETWEEN TWO CURVES

7 Find the area enclosed by the line $y = 2x$, the parabola $y = -x^2$ and the line $x = 2$.



9 Calculate the area of the region enclosed by the graphs of the parabola $y = 2x^2 - 5x - 3$ and the line $y = 3x - 3$. Indicate whether each statement below is a correct or incorrect step in calculating this area.

(a) Intersection points: $(0, -3)$ and $(4, 9)$

(b) Area $= \int_0^4 \left(8x - 2x^2\right) dx$

(c) Area $= \int_{-3}^9 \left(8x - 2x^2\right) dx$

(d) Area $= 21\frac{1}{3}$ units^2

13 A straight line through the origin cuts the parabola $y = 4x - x^2$ at the point where $x = 3$.

(a) Find the equation of this line.

(b) Calculate the area of the region bounded by the parabola and the straight line.