## Area Between two Curves

1. The diagram opposite shows the curve $y=4 x-x^{2}$ and the line $y=3$.
(a) Find the coordinates of A and B.
(b) Calculate the shaded area.

2. The curves with equations $y=x^{2}$ and $y=2 x^{2}-25$ intersect at $P$ and $Q$.

Calculate the area enclosed between the curves.

3. The diagram opposite shows the curve $y=7 x-2 x^{2}$ and the line $y=3 x$.

Calculate the shaded area.

4. The curves with equations $y=2 x^{2}-6$ and $\mathrm{y}=10-2 \mathrm{x}^{2}$ intersect at K and L .

Calculate the area enclosed by these two curves.

5. The diagram opposite shows part of the curves $y=x^{3}+x^{2}$ and $y=2 x^{2}+2 x$.

Calculate the shaded area.

6. The curve $y=x(x-3)(x+3)$ and the line $y=7 x$ intersect at the points $(0,0),(-4,-28)$ and $(4,28)$.

Calculate the area enclosed by the curve and the line.

7. The parabolas $y=x^{2}-4 x+8$ and $y=8+4 x-x^{2}$ intersect at $A$ and $B$.
(a) Find the coordinates of A and B.
(b) Calculate the shaded area.

8. The diagram shows parts of the curves $y=x^{3}-1$ and $y=x^{2}-1$.

Calculate the shaded area.

9. The curve $y=x^{3}-x^{2}-7 x+5$ and the line $y=2 x-4$ are shown opposite.
(a) B has coordinates $(1,-2)$. Find the coordinates of A and C .
(b) Hence calculate the shaded area.

10. The diagram shows the line $y=3 x-5$ and the curve $y=x^{3}-5 x^{2}-5 x+7$.
(a) Find the coordinates of P and Q .
(b) Calculate the shaded area.

11. The diagram opposite shows an area enclosed by 3 curves:
$\mathrm{y}=\mathrm{x}(\mathrm{x}+3), \quad \mathrm{y}=\frac{4}{\mathrm{x}^{2}} \quad$ and $\mathrm{y}=\mathrm{x}-\frac{1}{4} \mathrm{x}^{2}$
(a) P and Q have coordinates $(\mathrm{p}, 4)$ and $(\mathrm{q}, 1)$. Find the values of p and q .
(b) Calculate the shaded area.


