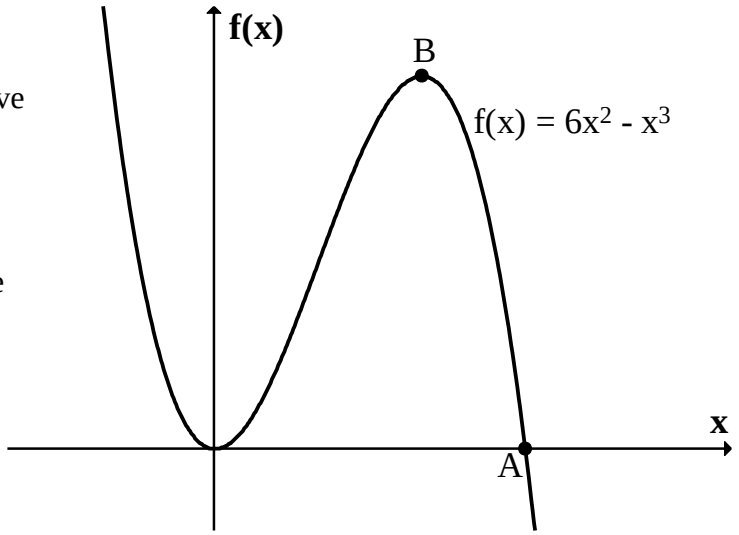
Stationary Points

1. Find the coordinates of the turning points of the curve with equation $y = x^3 - 3x + 2$ and determine their nature.

2. The diagram opposite shows part of the curve

$$f(x) = 6x^2 - x^3$$

(a) Find the coordinates of the point A.
(b) Find the coordinates of the point B, the maximum turning point of the curve.



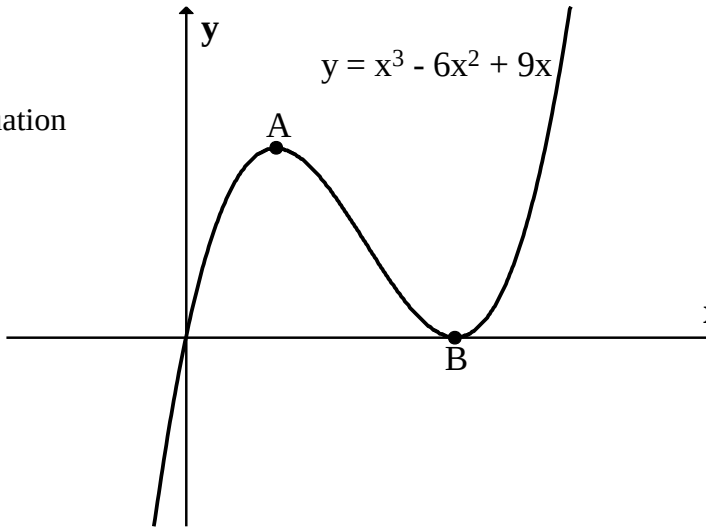
3. Find the coordinates of the turning points of the curve with equation $f(x) = x^4 - 4x^3$ and determine their nature.

4. A curve has equation $y = x^3 - 3x^2 - 9x + 12$.
Find the coordinates of the stationary points of this curve and determine their nature.

5. The diagram opposite shows the curve with equation $y = x^3 - 6x^2 + 9x$.

B has coordinates (3,0).

Find the coordinates of A.



6. A curve has equation $y = x^3 - 27x + 10$.
Find the coordinates of the turning points of this curve and determine their nature.

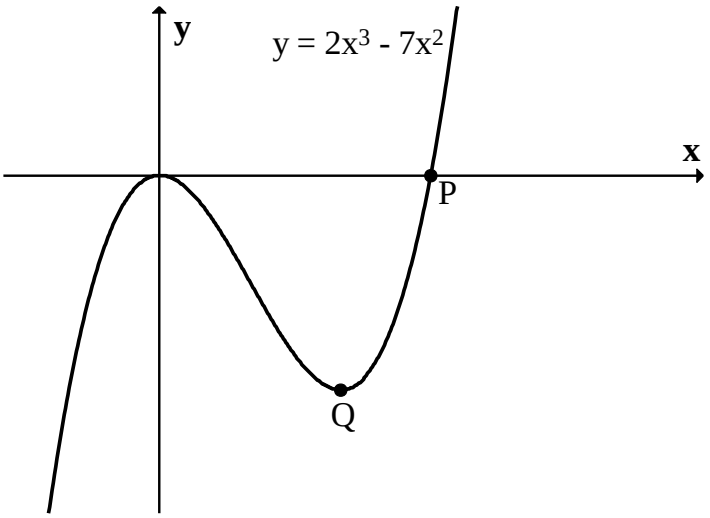
7. A curve has equation $y = 2x^3 - x^4$.

   (a) Find the coordinates of the points where this curve cuts the x-axis.
   (b) Find the coordinates of the stationary points on this curve and determine their nature.

8. Find the coordinates of the turning points of the curve with equation $y = x^3 - 6x^2 - 15x + 1$ and determine their nature.

9. The graph shows part of the curve $f(x) = 2x^3 - 7x^2$.

   (a) Find the coordinates of P.
   (b) Find the x-coordinate of the minimum turning point Q.



10. $f(x) = 12x - x^3$.

    Find the coordinates of the turning points of f(x) and determine their nature.

11. A curve has equation $y = 2x^3 - 7x^2 + 4x + 4$. Find the turning points of this curve and determine their nature.

12. A curve has equation $f(x) = 16x^3 + 3x^4$.

    Find the coordinates of the turning points of f(x) and determine their nature.

13. The graph of $f(x) = 2x^3(4 + 3x)$ is shown.

    (a) Determine the coordinates of A.
    (b) Find the coordinates of B.