



SPTA

Higher Homework

Mixed 4

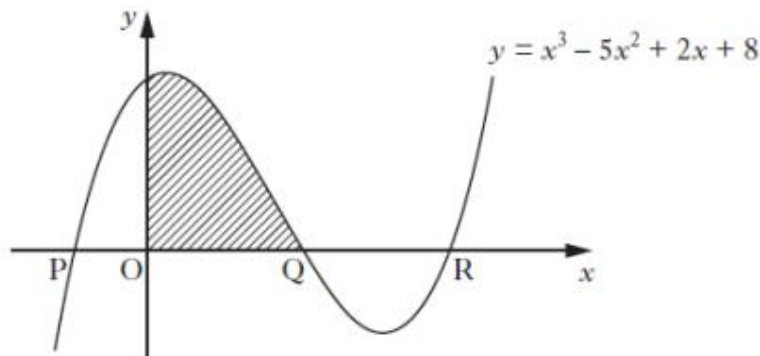


Integration, Differentiation, Polynomials & Str. Line

1. (a) (i) Show that $(x - 4)$ is a factor of $x^3 - 5x^2 + 2x + 8$.
(ii) Factorise $x^3 - 5x^2 + 2x + 8$ fully.
(iii) Solve $x^3 - 5x^2 + 2x + 8 = 0$

(6)

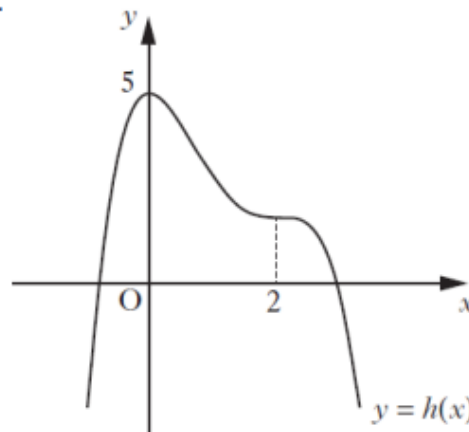
(b) The diagram shows the curve with equation $y = x^3 - 5x^2 + 2x + 8$



The curve crosses the x-axis at P , Q and R .
Determine the shaded area.

(6)

2. The diagram below shows the graph of a quartic $y = h(x)$, with stationary points at $x = 0$ and $x = 2$.



On separate diagrams sketch the graphs of:

- (a) $y = h'(x)$;
(b) $y = 2 - h'(x)$.

(3)

(3)

3. A straight line makes an angle of 60° with the positive direction of the x-axis.
Calculate the gradient of the line.

(2)