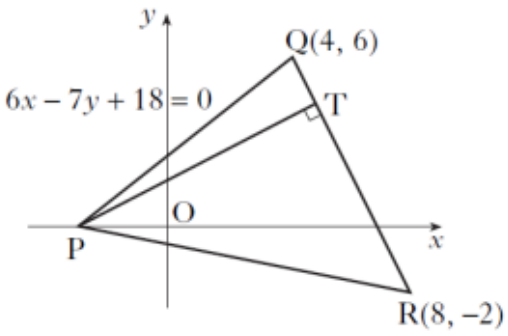
SPTA
Higher Homework
Mixed 5 Straight Line, Integration, Angle Formulae & Rec. Rel's

1. Triangle PQR has vertex P on the $x-axis$, as shown in the diagram.
Q and R are the points $(4, 6)$ and $(8, -2)$ respectively.
The equation of PQ is $6x - 7y + 18 = 0$.



(a) State the coordinates of P. **(1)**

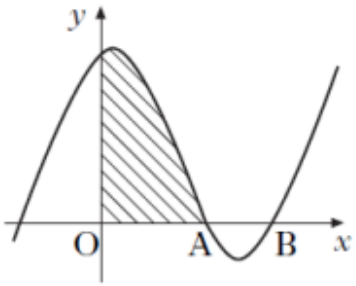
(b) Find the equation of the altitude of the triangle from P. **(3)**

(c) The altitude from P meets the line QR at T. Find the coordinates of T. **(4)**

2. Solve the equation $\sin 2x° = 6\cos x° \text{ for } 0 \leq x \leq 360$. **(4)**

3. The diagram shows a sketch of the graph of

$$y = x^3 - 4x^2 + x + 6$$



(a) Show that the graph cuts the x-axis at $(3, 0)$ **(1)**

(b) Hence or otherwise show the x- coordinate of A is 2 **(3)**

(c) Find the shaded area. **(5)**

4. A sequence is defined by the recurrence relation $u_{n+1} = 0{\cdot}3u_n + 6$ with $u_{10} = 10$.

What is the value of U_{12}? **(2)**