

Exercise 5G

5) $(2, y)$ $(5, 7)$ distance $3\sqrt{10}$

$$(5-2)^2 + (7-y)^2 = (3\sqrt{10})^2$$

$$9 + 49 - 14y + y^2 = 90$$

$$y^2 - 14y - 32 = 0$$

$$(y-16)(y+2) = 0$$

$$y = 16 \text{ or } y = -2$$

9) a) $y = 7x - 3$ (1)

$$4x + 3y - 41 = 0$$
 (2)

Sub for y in (2)

$$4x + 3(7x - 3) - 41 = 0$$

$$4x + 21x - 9 - 41 = 0$$

$$25x = 50$$

$$\underline{x = 2}$$

$$\underline{y = 7(2) - 3 = 11}$$

$\therefore A(2, 11)$

9b) On x -axis $y = 0$

l_2

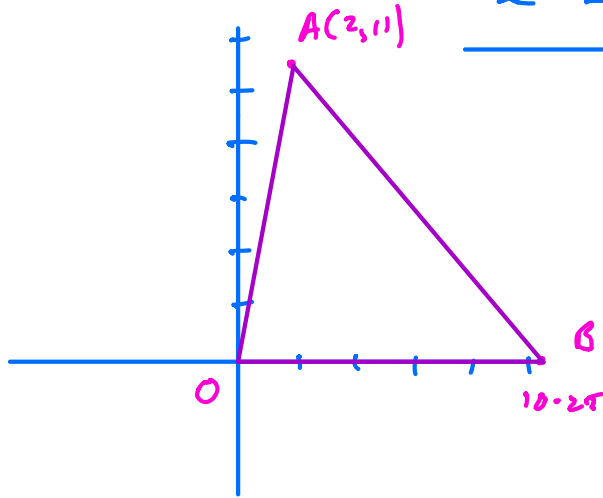
$$4x + 3y - 41 = 0$$

$$4x + 0 - 41 = 0$$

$$4x = 41$$

$$x = 10.25$$

$$\therefore B(10.25, 0)$$



$$\text{Area} = \frac{1}{2} \text{ base} \times \text{height}$$

$$= \frac{1}{2} \times 10.25 \times 11$$

$$= 56.375 \text{ units}^2$$

$$11) \quad R(5, -2) \quad S(9, 0)$$

$$a) \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-2)}{9 - 5} = \frac{2}{4} = \frac{1}{2}$$

$$y - y_1 = m(x - x_1)$$

$$y - 0 = \frac{1}{2}(x - 9)$$

$$l_1 \quad \underline{y = \frac{1}{2}x - \frac{9}{2}}$$

$$b) \quad \perp \text{ gradient} = -\frac{2}{1} = -2$$

$$y - y_1 = m(x - x_1)$$

$$y - (-2) = -2(x - 5)$$

$$y + 2 = -2x + 10$$

l_2

$$\underline{y = -2x + 8}$$

c) T on y-axis $\Rightarrow x = 0$ $y = 0 + 8 = 8$

$$\therefore T(0, 8)$$

$$R(5, -2)$$

$$S(9, 0)$$

$$T(0, 8)$$

$$|RS| = \sqrt{(9-5)^2 + (0-(-2))^2}$$

$$= \sqrt{20} = \sqrt{4 \times 5} = 2\sqrt{5}$$

$$|TR| = \sqrt{(0-5)^2 + (8-(-2))^2}$$

$$= \sqrt{25 + 100}$$

$$= \sqrt{125} = \sqrt{25 \times 5} = 5\sqrt{5}$$

e) Area of $\Delta = \frac{1}{2} \text{ base} \times \text{height}$

$$= \frac{1}{2} \times 5\sqrt{5} \times 2\sqrt{5}$$

$$= 25 \text{ units}^2$$

Exercise SG Q6, Q8, Q10, Q12

8)

