

No. 10

$$2x - y - 9 = 0 \quad \text{and} \quad 3x + ky = 0$$

Perpendicular line product of it gradient = -1

$$y = 2x - 9$$

$$\text{Gradient} = 2$$

$$\text{Gradient of other line} = -\frac{1}{2}$$

$$ky = -3x$$

$$y = -\frac{3}{k}x$$

$$\text{Gradient} = -\frac{3}{k} = -\frac{1}{2}$$

$$\frac{3}{k} = \frac{1}{2}$$

$$6 = k$$

$$k = 6$$

No 11

$$\text{slope} = -2 \quad \text{point } (3/8)$$

$$\frac{y-8}{x-3} = -2$$

$$-2(x-3) = y-8$$

$$-2x + 6 = y - 8$$

$$y = -2x + 14$$

No 8

$$2x + y - 8 = 0$$

$$y = -2x + 8$$

$$-14 = -2(11) + 8$$

$$-14 = -22 + 8$$

$$-14 = -14$$

Yes $(11, -14)$ is on the line $2x + y - 8 = 0$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 11 \\ -14 \end{pmatrix}$$

No 9

$$2x - 4y - 11 = 0 \quad \text{and} \quad x + ky - 10 = 0$$

parallel line have the same gradient.

$$\frac{4y}{4} = \frac{2x}{4} - \frac{11}{4}$$

$$y = \frac{1}{2}x - \frac{11}{4}$$

$$\frac{ky}{k} = \frac{-x}{k} + \frac{10}{k}$$

$$y = -\frac{x}{k} + \frac{10}{k}$$

$$-\frac{1}{k} = \frac{1}{2}$$

$$kx = -x2$$

$$k = -2$$

$$k = -2$$

NO 7.

7 Find the slope of.

a) $3x + y = 9$

$$y = 9 - 3x$$

$$\text{slope} = -3$$

b) $5x + y = 8$

$$y = 8 - 5x$$

$$\text{slope} = -5$$

c) $2x - y = 11$

$$y = 2x - 11$$

$$\text{slope} = 2$$

d) $4x - y - 9 = 0$

$$y = 4x - 9$$

$$\text{slope} = 4$$

e) $5x - 2y + 4 = 0$

$$5x + 4 = 2y$$

$$y = \frac{5}{2}x + 2$$

$$\text{slope} = \frac{5}{2}$$

No 12.

$$A = (0, 0), (5, 2), (3, 10)$$

$$Area = \frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$$

$$= \frac{1}{2} |0(2 - 10) + 5(10 - 0) + 3(0 - 2)|$$

$$= \frac{1}{2} (50 - 6)$$

$$= \frac{1}{2} (44)$$

$$Area = 22 \text{ sq. units}$$

$$B = (0, 0), (6, 1), (2, 3)$$

$$Area = \frac{1}{2} |0(1 - 3) + 6(3 - 0) + 2(0 - 1)|$$

$$= \frac{1}{2} (18 - 2)$$

$$= \frac{1}{2} \times 16$$

$$Area = 8 \text{ sq. units}$$

No 12.

C $(4, 1), (7, 2), (3, 6)$
 $x_1, y_1 \quad x_2, y_2 \quad x_3, y_3$

$$\text{Area} = \frac{1}{2} \left| 4(2-6) + 7(6-1) + 3(1-2) \right|$$

$$\frac{1}{2} \left| 4(-4) + 7(5) + 3(-1) \right|$$

$$\frac{1}{2} -16 + 35 - 3$$

$$\frac{1}{2} (16) = 8$$

$$\text{Area} = 8 \text{ sq. units.}$$

d. $(3, 8), (2, -1), (0, 3)$
 $x_1, y_1 \quad x_2, y_2 \quad x_3, y_3$

$$\text{Area} = \frac{1}{2} \left| 3(-1-3) + 2(-3-0) + 0(8-1) \right|$$

$$\frac{1}{2} (-12) + (-8)$$

$$\frac{1}{2} (-20)$$

$$= -10$$

$$\text{Area} = 10 \text{ sq. units}$$

12 (e).

$$e \quad (-1, 3), (1, 2), (2, -7)$$

$x_1 \ y_1 \quad x_2 \ y_2 \quad x_3 \ y_3$

$$\text{Area} = \frac{1}{2} |-1(2+7) + 1(-10) + 2(3-2)|$$

$$= \frac{1}{2} (-9 - 10 + 2)$$

$$= \frac{1}{2} (-17)$$

$$\text{Area} = 8.5 \text{ sq. units.}$$