Name: Bendo Oluwabo Toluse

Matric No: 19/sc01/030

1) $x - y = 14$ — (i)

$x^2 + y^2 - 6x + 8y = 0$ (ii)

$x - y - 14 = 0$ — (i)

$x^2 + y^2 - 6x + 8y = 0$ — (ii)

from eqn I

$y = x - 14$

$x^2 + (x-14)^2 - 6x + 8(x-14) = 0$

$x^2 + x^2 + (-28) + 196 - 6x + 8x - 112$

$2x^2 - 28 + 196 - 6x + 8x - 112$

$2x^2 + 196 - 140 + 2x$

$2x^2 + 2x + 56$

$x_1 = 5.26$ or $x_2 = -5.26$

when $x = 5.26$ or when $x = -5.26$

$y = x - 14$ | $y = x - 14$

$y = 5.26 - 14$ | $y = -5.26 - 14$

$y = -8.74$ | $y = -19.26$

2) $2x + y - 10 = 0$

$x^2 + y^2 + 4x - 6y = 0$

from eqn 1

$y = -2x + 10$

Substitute in eqn 2

$x^2 + (-2x + 10)^2 + 4x - 6(-2x + 10) = 0$

$x^2 + 4x^2 - 40x + 100 + 4x + 12x - 60 = 0$

$5x^2 - 24 + 40 = 0$

$x = 1.5$ or $x_2 = -1.5$

$y = -2x + 10$

Substitute $x = 1.5$ in eqn (iii)

$y = -2(1.5) + 10$

$y = -3 + 10$

$y = 7$

The intersection is at point $(1.5, 7)$,

$y = -2x + 10$

Substitute $x = -1.5$ in eqn (

$y = -2(-1.5) + 10$

$y = 3 + 10$

$y = 13$

The intersection point is $(-1.5, 1$

3) $x - 5y - 2 = 0$ — (i)

$x^2 + 25y^2 - 6xy - 16 = 0$ — (ii)

$\frac{x-2}{5} = y$ — (iii)

Substitute eqn (iii) into eqn (ii)

$x^2 + 25\left(\frac{x-2}{5}\right)^2 - 6x\left(\frac{x-2}{5}\right) - 16 = 0$

$x^2 + 25\left(\frac{x^2 - 4x + 4}{25}\right) - \frac{6x^2 + 12x}{5} - 16 = 0$

$x^2 + x^2 - 4x + 4 - \frac{6x^2 + 12x}{5} - 16 = 0$

multiply through by 5

$5x^2 + 5x^2 - 20x + 20 - 6x^2 + 12x - 80 = 0$

$4x^2 - 8x - 60 = 0$

$\therefore x_1 = 5, x_2 = -3$

from eqn 3 Substitute $x_1 = 5$ into eqn 3 and $x_2 = -3$ in eqn 3

$\frac{x-2}{5} = y$, when $x = 5$

$\frac{5-2}{5} = y$

$\frac{3}{5}$

$\frac{x-2}{5} = y$ when $x = -3$

$\frac{-3-2}{5} = y$

$\frac{-5}{5} = y = -1 = y$

The intersection point is at $(5, \frac{3}{5})$,

The intersection point is at $(-3, -1)$