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COMPUTER ENGINEERING. 19/ENG 02/1050.

Assignment.

$$x - y - 14 = 0 \quad \text{and} \quad x^2 + y^2 - 6x + 8y = 0.$$

Solution

$$x - y - 14 = 0 \quad \text{--- (i)}$$

$$y = x - 14 \quad \text{--- (ii)}$$

$$x^2 + y^2 - 6x + 8y = 0 \quad \text{--- (iii)}$$

Sub equ (ii) into equ (iii).

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

$$x^2 + x^2 - 28x + 196 - 6x + 8x - 112 = 0.$$

$$x^2 + x^2 - 28x - 6x + 8x + 196 - 112 = 0.$$

$$2x^2 - 26x + 84 = 0.$$

$$\therefore x = 7 \quad \text{and} \quad 6.$$

When $x = 7$, into equ (ii)

$$y = 7 - 14$$

$$y = -7.$$

When $x = 6$ into equ (ii).

$$y = 6 - 14.$$

$$y = -8.$$

\therefore The points of intersection are $(7, -7)$ and $(6, -8)$.

$$2. \quad 2x + y - 10 = 0 \quad \text{and} \quad x^2 + y^2 + 4x - 6y = 0.$$

Solution

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

$$y = 10 - 2x \quad \text{--- (i)}$$

$$x^2 + y^2 + 4x - 6y = 0 \quad \text{--- (ii)}$$

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

$$x^2 + 4x^2 - 20x - 20x + 100 + 4x - 60 + 12x = 0.$$

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

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$$\therefore x =$$

No Point of Intersection.

$$3. \quad x - 5y - 2 = 0 \quad \text{and} \quad x^2 + 25y^2 - 6xy - 16 = 0.$$

Solution.

$$x - 5y - 2 = 0.$$

$$5y = x - 2.$$

$$y = \frac{x-2}{5} \quad \text{--- (1)}$$

$$x^2 + 25y^2 - 6xy - 16 = 0.$$

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

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

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

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

$$\frac{4}{5}x^2 + \frac{8}{5}x - 12 = 0.$$

Multiply both sides by 5.

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

$$\therefore x = \frac{-8 \pm \sqrt{8^2 - 4(4)(-60)}}{2(4)} \quad \therefore x = 5 \text{ and } -3.$$

When $x = 5$ into equ (1).

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

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

When $x = -3$ into equ (2).

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

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

$$y = -1$$

∴ The points of intersections are $(5, \frac{3}{5})$ and $(-3, -1)$.