MAT 102
ANULUMKO CHUKWUEBUKA OLIVER
MECHATRONICS ENGINEERING
19/ENG05/1014

1 $x - y - 14 = 0$

$x^2 + y^2 - 6x + 8y = 0$

$x = y + 14$

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

$y^2 + 28y + 196 + y^2 - 6y - 84 + 8y = 0$

$2y^2 + 30y + 112$

$y_1 = -7 \quad y_2 = -8$

$x = y + 14$ $\quad$ $x = y + 14$

$x = -7 + 14$ $\quad$ $x = -8 + 14$

$x = 7$ $\quad$ $x = 6$

$(7, -7)$ $\quad$ $(6, -8)$

2 $2x + y - 10 = 0$ and $x^2 + y^2 + 4x - 6y = 0$

$y = -2x + 10$

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

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

$5x^2 - 40x + 100 + 16x - 60 = 0$

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

$x_1 = 2.4 + 1.4967i \quad x_2 = 2.4 - 1.4967i$

$y = -2x + 10$

$y_1 = -2(2.4 + 1.4967i) + 10 \quad y_2 = -2(2.4 - 1.4967i) + 10$

$y_1 = 5.2 - 2.9334i \quad y_2 = 14.9 + 2.9334i$

$(2.4 + 1.4967i, 5.2 - 2.9334i)$

$(2.4 - 1.4967i, 14.9 + 2.9334i)$

3 $x - 5y - 2 = 0$ and $x^2 + 25y^2 - 6xy - 16 = 0$

$x = 5y + 2$

$(5y + 2)^2 + 25y^2 - 6(5y + 2)y - 16 = 0$

$25y^2 + 10y + 4 + 25y^2 + (30y - 12)y - 16 = 0$

$25y^2 + 20y + 4 + 25y^2 - 30y^2 - 12y - 16 = 0$

$20y^2 - 8y - 12 = 0$

~~$y_1 = 0.8262$~~ ~~$y_2 = -0.7262$~~

$y_1 = 1$ $y_2 = -3/5$

$x = 5y + 2$ $x_2 = 5 \cdot -3/5 + 2$

$x = 5(1) + 2$ $x_2 = -3 + 2$

$x = 7$ $x_2 = -1$

$(7, 1)$ $(-1, -3/5)$