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Computer Engr.
19/ENG02/020
MAT 102

1. $x - y - 14 = 0$

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

$x = y + 14$

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

$y^2 + 28y + 196 + y^2 - 6(y+14) + 8y = 0$

$2y^2 + 36y + 196 - 6y - 84 = 0$

$2y^2 + 30y + 112 = 0$

$y^2 + 15y + 56 = 0$

$y^2 + 7y + 8y + 56 = 0$

$y(y+7) + 8(y+7) = 0$

$(y+7)(y+8) = 0$

$y = -7$ or -8

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

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

Hence the points of intersection are $(7, -7)$ and $(6, -8)$

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

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

$x = 2 + 5y$

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

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

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

$5y^2 + 2y - 3 = 0$

$5y^2 + 5y - 3y - 3 = 0$

$5y(y+1) - 3(y+1) = 0$

$(5y-3)(y+1) = 0$

$5y - 3 = 0$ or $y + 1 = 0$

$y = 3/5$ or $y = -1$

$x = 2 + 5y$

$x = 2 + 5(3/5)$ or $x = 2 + 5(-1)$

$x = 2 + 3$ or $x = 2 - 5$

$x = 5$ or $x = -3$

Points of intersection are $(5, 3/5)$ and $(-3, -1)$