10/[illegible]/[illegible]

JAMES [illegible]

MAT102

(1) $x - y - 14 = 0$

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

$x = y + 14$

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

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

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

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

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

$\therefore y = -7$ or $y = -8$

@ $y = -7$ $x = y + 14 = -7 + 14 = 7$

@ $y = -8$ $x = y + 14 = -8 + 14 = 6$

$\therefore$ Both intersect at $(7, -7)$ & $(6, -8)$

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

$y = -2x + 10$

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

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

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

$x = \frac{12}{5} + \frac{2\sqrt{14}}{5} \cdot \sqrt{-1}$ or $x = \frac{12}{5} - \frac{2\sqrt{14}}{5} \cdot \sqrt{-1}$

$\therefore$ they [illegible] intersect

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

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

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

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

$10y^2 + 4y - 6 = 0$, $y = -1$ or $y = \frac{3}{5}$

$x = 5(-1) + 2 = -3$ $x = 5(\frac{3}{5}) + 2 = 5$

$\therefore (-3, -1)$ & $(5, \frac{3}{5})$

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