Find the inverse of $\begin{bmatrix} 3 & 9 & 7 \\ -1 & -7 & -4 \\ 1 & 2 & 2 \end{bmatrix}$. $\left[\begin{array}{ccc|ccc} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{array}\right]$ $R_1 \leftrightarrow R_3$

SCORE: ___ / 7 PTS

$\left[\begin{array}{ccc|ccc} 1 & 2 & 2 & 0 & 0 & 1 \\ -1 & -7 & -4 & 0 & 1 & 0 \\ 3 & 9 & 7 & 1 & 0 & 0 \end{array}\right]$ R_2+R_1, $R_3+(-3)R_1$

$\left[\begin{array}{ccc|ccc} 1 & 2 & 2 & 0 & 0 & 1 \\ 0 & -5 & -2 & 0 & 1 & 1 \\ 0 & 3 & 1 & 1 & 0 & -3 \end{array}\right]$ $-\frac{1}{5}R_2$

$\left[\begin{array}{ccc|ccc} 1 & 2 & 2 & 0 & 0 & 1 \\ 0 & 1 & \frac{2}{5} & 0 & -\frac{1}{5} & -\frac{1}{5} \\ 0 & 3 & 1 & 1 & 0 & -3 \end{array}\right]$ $R_3+(-3)R_2$

$\left[\begin{array}{ccc|ccc} 1 & 2 & 2 & 0 & 0 & 1 \\ 0 & 1 & \frac{2}{5} & 0 & -\frac{1}{5} & -\frac{1}{5} \\ 0 & 0 & -\frac{1}{5} & 1 & \frac{3}{5} & -\frac{12}{5} \end{array}\right]$ $-5R_3$

$\left[\begin{array}{ccc|ccc} 1 & 2 & 2 & 0 & 0 & 1 \\ 0 & 1 & \frac{2}{5} & 0 & -\frac{1}{5} & -\frac{1}{5} \\ 0 & 0 & 1 & -5 & -3 & 12 \end{array}\right]$ $R_1+(-2)R_3$, $R_2+(-\frac{2}{5})R_3$

$\left[\begin{array}{ccc|ccc} 1 & 2 & 0 & 10 & 6 & -23 \\ 0 & 1 & 0 & 2 & 1 & -5 \\ 0 & 0 & 1 & -5 & -3 & 12 \end{array}\right]$ $R_1+(-2)R_2$

$\left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 6 & 4 & -13 \\ 0 & 1 & 0 & 2 & 1 & -5 \\ 0 & 0 & 1 & -5 & -3 & 12 \end{array}\right]$

Find and use an inverse matrix to solve the system $\begin{aligned} 12x - 13y &= 8 \\ 7x + 5y &= -1 \end{aligned}$.

SCORE: ___ / 5 PTS

$$\begin{bmatrix} 12 & -13 \\ 7 & 5 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 8 \\ -1 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{60 - -91}\begin{bmatrix} 5 & 13 \\ -7 & 12 \end{bmatrix}\begin{bmatrix} 8 \\ -1 \end{bmatrix}$$

$$= \frac{1}{151}\begin{bmatrix} 40-13 \\ -56-12 \end{bmatrix}$$

$$= \begin{bmatrix} \frac{27}{151} \\ \frac{-68}{151} \end{bmatrix}$$

Find $\begin{vmatrix} 2 & 0 & 1 & -2 \\ -1 & 4 & -3 & 0 \\ -2 & 3 & 0 & 4 \\ 3 & 1 & -4 & 0 \end{vmatrix}$.

SCORE: ___ / 6 PTS

$$= -(-2)\begin{vmatrix} -1 & 4 & -3 \\ -2 & 3 & 0 \\ 3 & 1 & -4 \end{vmatrix}\begin{matrix} -1 & 4 \\ -2 & 3 \\ 3 & 1 \end{matrix} - 4\begin{vmatrix} 2 & 0 & 1 \\ -1 & 4 & -3 \\ 3 & 1 & -4 \end{vmatrix}\begin{matrix} 2 & 0 \\ -1 & 4 \\ 3 & 1 \end{matrix}$$

$$= 2\left(12+0+6-(-27+0+32)\right) - 4\left(-32+0-1-(12-6+0)\right)$$

$$= 2(18-5) - 4(-33-6)$$

$$= 2(13) - 4(-39)$$

$$= 26 + 156$$

$$= 182$$

$$x^2 + y^2 \geq 5$$

Graph, and find the vertices of the solution set of $x - y > -1$. X-INT = -1 y-INT = 1 **SCORE: ___ / 12 PTS**

$3x - y < 5$ $= \frac{5}{3}$ -5

Show proper algebra work for full credit. **NO CREDIT FOR GUESS & CHECK.**

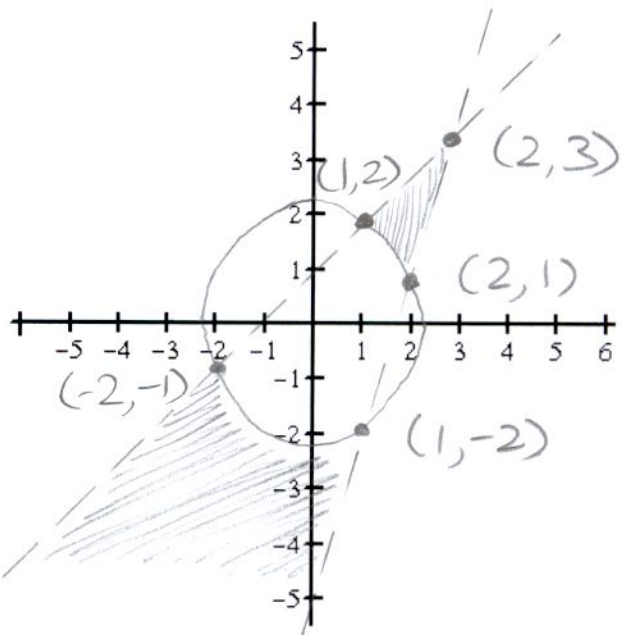
$x - y = -1$

$3x - y = 5$

$-2x = -4$

$x = 2$

$y = 3$ $(2,3)$



$x - y = -1 \rightarrow x = y - 1$

$x^2 + y^2 = 5$

$(y-1)^2 + y^2 = 5$

$2y^2 - 2y + 1 = 5$

$2y^2 - 2y - 4 = 0$

$y^2 - y - 2 = 0$

$(y-2)(y+1) = 0$

$y = 2$ or $y = -1$

$x = 1$ $x = -2$

$(1,2)$ $(-2,-1)$

$3x - y = 5 \rightarrow y = 3x - 5$

$x^2 + y^2 = 5$

$x^2 + (3x-5)^2 = 5$

$10x^2 - 30x + 25 = 5$

$10x^2 - 30x + 20 = 0$

$x^2 - 3x + 2 = 0$

$(x-2)(x-1) = 0$

$(2,1)$ $x = 2$ or $x = 1$ $(1,-2)$

$y = 1$ $y = -2$