5. Use the Gauss-Jordan method to compute the inverse of the matrix. **No points for using any other method.** (10 pts)

$\begin{bmatrix} 2 & 10 \\ 1 & 4 \end{bmatrix}$

$$\left[\begin{array}{cc|cc} 2 & 10 & 1 & 0 \\ 1 & 4 & 0 & 1 \end{array}\right] \xrightarrow{\frac{1}{2}[1]} \left[\begin{array}{cc|cc} 1 & 5 & \frac{1}{2} & 0 \\ 1 & 4 & 0 & 1 \end{array}\right] \xrightarrow{[2]+(-1)[1]}$$

$$\left[\begin{array}{cc|cc} 1 & 5 & \frac{1}{2} & 0 \\ 0 & -1 & -\frac{1}{2} & 1 \end{array}\right] \xrightarrow{-[2]} \left[\begin{array}{cc|cc} 1 & 5 & \frac{1}{2} & 0 \\ 0 & 1 & \frac{1}{2} & -1 \end{array}\right] \xrightarrow{[1]+(-5)[2]} \left[\begin{array}{cc|cc} 1 & 0 & -2 & 5 \\ 0 & 1 & \frac{1}{2} & -1 \end{array}\right]$$

$$A^{-1} = \begin{bmatrix} -2 & 5 \\ \frac{1}{2} & -1 \end{bmatrix}$$

blue: $\begin{bmatrix} -1 & 3 \\ \frac{1}{2} & -1 \end{bmatrix}$

6. Suppose a manufacturer finds that the cost y of producing x units is given by a formula of the form $y = mx + b$. If it costs \$680 to produce 20 units and \$950 to produce 50 units: (10 pts)

a. What is the fixed cost?

\$ 500 = b

(other version \$ 700)

$$m = \frac{950-680}{50-20} = \frac{270}{30} = 9$$

$680 = 9(20) + b$

$680 = 180 + b$

$500 = b$

b. What is the marginal/variable cost?

\$ 9 = m

(other version \$ 30)

$y = 9x + 500$

$(y = 30x + 700)$