

Part I

$$\begin{bmatrix} 9 & -2 \\ -4 & 1 \end{bmatrix}$$

$$-\vec{v}_1 - 2(-4) = -1$$

$$-\vec{v}_1 = -9$$

$$-\vec{v}_1 + 8 = -1$$

$$\vec{v}_1 = 9$$

$$2\vec{v}_1 + 6\vec{v}_2 = -6$$

$$2(1 - 2\vec{v}_2) + 6\vec{v}_2 = -6$$

$$\begin{bmatrix} 9 \\ -4 \end{bmatrix}$$

$$-\vec{v}_1 - 2\vec{v}_2 = -1 + 2\vec{v}_2$$

$$+ 2\vec{v}_2$$

$$\frac{-\vec{v}_1}{-1} = \frac{-1 + 2\vec{v}_2}{-1}$$

$$\vec{v}_1 = 1 - 2\vec{v}_2$$

$$2 - 4\vec{v}_2 + 6\vec{v}_2 = -6$$

$$\frac{2\vec{v}_2}{2} = \frac{-8}{2}$$

$$\vec{v}_2 = -4$$

$$\begin{bmatrix} -2 \\ 1 \end{bmatrix}$$

$$2\vec{v}_1 + 6\vec{v}_2 = 2$$

$$-\vec{v}_1 - 2\vec{v}_2 = 0$$

$$+ 2\vec{v}_2$$

$$\frac{-\vec{v}_1}{-1} = \frac{2\vec{v}_2}{-1}$$

$$\vec{v}_1 = -2\vec{v}_2$$

$$2(-2\vec{v}_2) + 6\vec{v}_2 = 2$$

$$-4\vec{v}_2 + 6\vec{v}_2$$

$$2\vec{v}_2 = 2$$

$$\vec{v}_2 = 1$$

$$-\vec{v}_1 - 2(1) = 0$$

$$-\vec{v}_1 - 2 = 0$$

$$+ 2$$

$$\frac{-\vec{v}_1}{-1} = \frac{2}{-1}$$

$$\vec{v}_1 = -2$$

Part II

$$-6\vec{v}_1 + 2\vec{v}_2 = 2$$

$$-6 + 2\vec{v}_2 = 2$$

$$+ 6$$

$$+ 6$$

$$\frac{2\vec{v}_2}{2} = \frac{8}{2}$$

$$\vec{v}_2 = 4$$

$$\begin{bmatrix} 1 \\ 4 \end{bmatrix}$$

$$\frac{-\vec{v}_1}{-1} = \frac{-1}{-1}$$

$$\vec{v}_1 = 1$$

$$-6\vec{v}_1 + 2\vec{v}_2 = 6 \rightarrow -12 + 2\vec{v}_2 = 6$$

$$\begin{bmatrix} 2 \\ 9 \end{bmatrix}$$

$$\frac{-\vec{v}_1}{-1} = \frac{-2}{-1}$$

$$\vec{v}_1 = 2$$

$$\frac{2\vec{v}_2}{2} = \frac{18}{2}$$

$$\vec{v}_2 = 9$$