

CS 132 – Spring 2020, Assignment 2

Answer 1.

- (a) *Reduced Echelon Form*
- (b) *Echelon Form*
- (c) *Nothing*
- (d) *Echelon Form*

Answer 2.

$$\begin{bmatrix} 1 & 0 & -1 & 0 \\ 0 & 1 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Answer 3.

If we start by putting this in reduced row echelon, we get the following matrix:

$$\begin{bmatrix} 1 & 0 & 0 & -9 \\ 0 & 1 & 0 & 4 \end{bmatrix}$$

With that done, we can solve it, and we get that the answer to this equation is the line in space that varies in its y value but maintains $x = -9$ and $z = 4$.

Answer 4.

To start off with, lets setup the matrix into Echelon Form:

$$\begin{bmatrix} 1 & 1 & 1 & -1 \\ 0 & 1 & 3 & 4 \\ 0 & 0 & 1 & 3 \end{bmatrix}$$

With that done, lets now put this into reduced Echelon Form:

$$\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & -5 \\ 0 & 0 & 1 & 3 \end{bmatrix}$$

With that out of the way, we've reached our answer of $f(t) = 1 - 5t + 3t^2$

Answer 5.

To start of with, lets setup the array and put it into reduced echelon form:

$$\begin{bmatrix} 1 & 0 & 0 & -20 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 1 & -4 \end{bmatrix}$$

Now we can plug this back into the formula and re-organize it: $(x - 1)^2 + (y - 2)^2 = 5^2$, which gets us a center of $(1, 2)$ and a radius of 5.

Answer 6.

- $x_1 = -3|x_2 = 4|x_3 = -7$
- $x_1 = 1|x_2 = 5|x_3 = 3|x_4 = 9|x_5 = 7|x_6 = 8$
- $x_1 = 1|x_2 = 5|x_3 = 3|x_4 = 9|x_5 = 7|x_6 = 8$
- $x_1 = 2|x_2 = -2|x_3 = 4|x_4 = -4|x_5 = k \in R$
- $x_1 = 2 + 1.04878049x_4 + 2.41463415x_5$
 $x_2 = -2 - 2.07317073x_4 - 4.12195122x_5$
 $x_3 = 4 + 1.90243902x_4 + 4.17073171x_5$
- $x_1 = -15|x_2 = 22|x_3 = -81$
 $x_4 = a \in R|x_5 = b \in R|x_6 c \in R|x_7 = d \in R$
- $x_1 = -0.06065384x_4 - 0.87918104x_5 + 3.51623543$
 $x_2 = -0.26277451x_4 - 0.21397584x_5 - 0.88362151$
 $x_3 = -1.20489538x_4 + 0.25831521x_5 - 1.18473639$