Q1

2 Points

How many solutions can a system of 3 linear equations with 5 variables have? Select all that could apply.

- [x] zero
- [ ] one
- [ ] two
- [ ] three
- [x] infinitely many

Q2

2 Points

For which values of a, b, c, and d is the following augmented matrix in reduced row-echelon form?

$$\left[\begin{array}{cccc|c} 0 & b & 3 & 1 & d \\ 0 & 0 & 0 & c & 1 \\ 0 & a & 0 & 0 & 0 \end{array}\right]$$

Answer:

$a =$

0

$b =$

1

$c =$

0

$d =$

0

Q3

3 Points

Find a function $f(t)$ of the form $f(t) = ae^{3t} + be^{2t} + ce^{t}$ such that $f(0) = 1$ and $f'(0) = 1$. Is it unique?

Show your work!

Hint: Use the given conditions $f(0) = 1$ and $f'(0) = 1$ to set up a system of linear equations for a, b, c.

Q4

3 Points

Solve the following differential equation (more precisely, find the solution of the initial value problem)

$$y'(t) = t^2 \sin(2t), \quad y(0) = 1.$$

Show your work!