

Activity 1.1.3 Linear equations and their solutions.

a. Which of the following equations are linear? Please provide a justification for your response.

1.

$$2x + xy - 3y^2 = 2.$$

2.

$$-2x_1 + 3x_2 + 4x_3 - x_5 = 0.$$

3.

$$x = 3z - 4y.$$

b. Consider the system of linear equations:

$$x + y = 3$$

$$y - z = 2$$

$$2x + y + z = 4.$$

1. Is $(x, y, z) = (1, 2, 0)$ a solution?
2. Is $(x, y, z) = (-2, 1, 0)$ a solution?
3. Is $(x, y, z) = (0, -3, 1)$ a solution?
4. Can you find a solution in which $y = 0$?
5. Do you think there are other solutions? Please explain your response.