Question 1: Consider the system of equations $x + y + z = 1$, $2x + 3y + 2z = 1$, $2x + 3y + (a^2 - 1)z = a + 1$ then

(a) System has a unique solution for $|a| = \sqrt{3}$

(b) System is inconsistence for $|a| = \sqrt{3}$

(c) System is inconsistence for $a = 4$

(d) System is inconsistence for $a = 3$

Answer: (b)

Solution:

Given system of linear equations:

$x + y + z = 1$ ....(1)

$2x + 3y + 2z = 1$ ....(2)

$2x + 3y + (a^2 - 1)z = a + 1$ .....(3)

Consider $a^2 - 1 = 2$

then LHS of (2) and (3) are same but RHS are not.

Hence $a^2 = 3 \Rightarrow |a| = \sqrt{3}$

For $|a| = \sqrt{3}$, system is inconsistence.

So option (b) is correct.