Note: The score you earn will be based on the correctness of your solutions. A “right answer” will earn no credit without a correct solution to support it.

1. (6 points) Determine whether the lines

\[ x = 3t + 2, \quad y = t - 1, \quad z = 6t + 1, \quad \text{and} \]
\[ x = 3s - 1, \quad y = s - 2, \quad z = s \]

intersect.

2. (6 points) Find \( b \) and \( c \) so that \((5, b, c)\) is orthogonal to both \((1, 2, 3)\) and \((1, -2, 1)\).

3. (6 points) Find all values of \( x \) such that \((7, x, -10)\) and \((3, x, x)\) are orthogonal.