1 (a) If x and y are vectors in $\mathbb{R}^n$, then prove that $||x + y|| \geq |\,||x|| - ||y||\,|$. Also verify it for the vectors $x = [2, -1, 3, 2]$ and $y = [4, 3, 2\ 1]$ in $\mathbb{R}^4$. (5.5+2)

(b) Solve the following system of linear equations using Gaussian Elimination method. Also indicate whether the system is consistent or inconsistent.

$$3x - 2y + 4z = -54$$

$$-x + y - 2z = 20$$

$$5x - 4y + 8z = -83$$ (6.5+1)

(c) Find the quadratic equation $y = ax^2 + bx + c$ that goes through the points (3,18), (2,9) and (–2,13). (7.5)