5) b)

$$A = \begin{bmatrix} 100 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \qquad X = (1,1,1), \; Y = (1,-1,-1)$$

$$X + Y = (2,0,0)$$

$$d(X+Y) = d(2,0,0) = \|(2,0,0)\|_A = \left\| A \begin{pmatrix} 2 \\ 0 \\ 0 \end{pmatrix} \right\|_2 = \|(200,0,0)\|_2 = 200$$

$$d(X) = d(1,1,1) = \|(1,1,1)\|_A = \|(100,1,1)\|_2 = \sqrt{2}, \quad d(Y) = d(1,0,0) = 100$$