Why is $\|x\|_0 = \min |x_i|$ not a norm? (More than one might apply. Just pick a correct one.)

(a) It fails positive definiteness.
(b) It fails absolute homogeneity.
(c) It fails the triangle inequality.
(d) It is a norm.
Why is $\|Ax\| \leq \|A\|\|x\|$? (Hint: What is the definition of an induced norm?)
Suppose \( A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \). What is \( \|A\|_F \)?

(a) 0
(b) 1
(c) \( \sqrt{2} \)
(d) 2
(e) None of these are correct.
Suppose \( A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \). What is \( \|A\|_2 \)?

(a) 0  
(b) 1  
(c) \( \sqrt{2} \)  
(d) 2  
(e) None of these are correct.
Use some simple vectors to estimate \( \| \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \|_1 \).