12.1 #9

\[ \text{Hint: triangle inequality.} \]

\[ a \quad \text{b} \quad \text{c} \quad \text{longest} \leq \text{short}_1 + \text{short}_2 \]

Only way for longest = short$_1 +$ short$_2$

is if $\Delta$ is a line

\[ a \quad \text{b} \quad \text{c} \]
|PA| = |PB|
Vectors

\[ \langle 2, 1 \rangle \]

\[ \langle 10, 0 \rangle \]
magnitude

magnitude is the length of the vector

\[ |\langle x_1, y_1, z_1 \rangle| = \sqrt{x_1^2 + y_1^2 + z_1^2} \]
\[(a, b)\]  
\[(-3, 2)\]  
\[(-5, 1)\]  
\[(a+2, b+1)\]  
\[(2, 1)\]  
\[(5, 4)\]  
\[(3, 3)\]  

\[\langle 2, 1 \rangle\]  

Magnitude is \[\sqrt{4+1} = \sqrt{5}\]
\[ \vec{a} + \vec{b} = \vec{c} \]

\[ \langle a_1, a_2 \rangle + \langle b_1, b_2 \rangle = \langle a_1 + b_1, a_2 + b_2 \rangle. \]