## Answer on Question \#46871 - Physics - Other

IF line $(O A)=4 i+3 j$, line $(O B)=6 i-2 j$ and line $(O C)=2 i-j$. Deduce the length of the triangle CA.

13--V
20--V
V29
V17

## Solution:

$0 A=4 i+3 j$
$O B=6 i-2 j$
$O C=2 i-j$
Equation for the three vectors in a triangle:

$$
\begin{gathered}
\overrightarrow{\mathrm{OA}}=\overrightarrow{\mathrm{OC}}+\overrightarrow{\mathrm{CA}} \\
\overrightarrow{\mathrm{CA}}=\overrightarrow{\mathrm{OA}}-\overrightarrow{\mathrm{OC}}=(4 \mathrm{i}+3 \mathrm{j})-(2 \mathrm{i}-\mathrm{j})=2 \mathrm{i}+4 \mathrm{j} \\
\overrightarrow{\mathrm{CA}}=<2,4>
\end{gathered}
$$

The formula for the length of a vector is the Pythagorean Formula

$$
|\overrightarrow{\mathrm{CA}}|=\sqrt{2^{2}+4^{2}}=\sqrt{4+16}=\sqrt{20}
$$

Answer: $\sqrt{20}$

