Please PRINT your name _____

No calculators, cell phones, computers, notes, etc.

Circle your answer. Make your work correct, complete and coherent.

The quiz is worth 5 points. The solutions will be posted on my website later today.

Quiz 12, March 2, 2020

Find the length of the curve $\vec{r}(t) = 4\cos t\,\vec{i} + 4\sin t\,\vec{j} + 3t\,\vec{k}$, for $0 \leq t \leq \pi/2$.

ANSWER: The arc length is

$$\int_0^{\pi/2} |\vec{r}'(t)|\,dt = \int_0^{\pi/2} |-4\sin t\,\vec{i} + 4\cos t\,\vec{j} + 3\,\vec{k}|\,dt$$

$$= \int_0^{\pi/2} \sqrt{16\sin^2 t + 16\cos^2 + 9}\,dt = \int_0^{\pi/2} \sqrt{16+9}\,dt = \int_0^{\pi/2} 5\,dt = 5t\big|_0^{\pi/2} = \boxed{\frac{5\pi}{2}}.$$