Answer on Question #41758 – Physics – Electromagnetism

Question.

Radio waves travel at the speed of light. Radio station KSTX broadcasts at a frequency of 89.1 MHz. What is the wavelength of the radio station's radio waves?

Given:

$c = 3 \cdot 10^8 \ \frac{m}{s}$ is a speed of light

$\nu = 89.1 \ MHz = 8.91 \cdot 10^7 \ Hz$ is a frequency of radio waves

Find:

$\lambda = ?$ is a wavelength of radio waves

Solution.

By definition:

$\lambda = c \cdot T$, where T is a period of the waves.

$$T = \frac{1}{\nu}$$

Therefore,

$$\lambda = \frac{c}{\nu}$$

Calculate:

$$\lambda = \frac{3 \cdot 10^8}{8.91 \cdot 10^7} = 3.37 \ m$$

Answer.

$$\lambda = \frac{c}{\nu} = 3.37 \ m$$