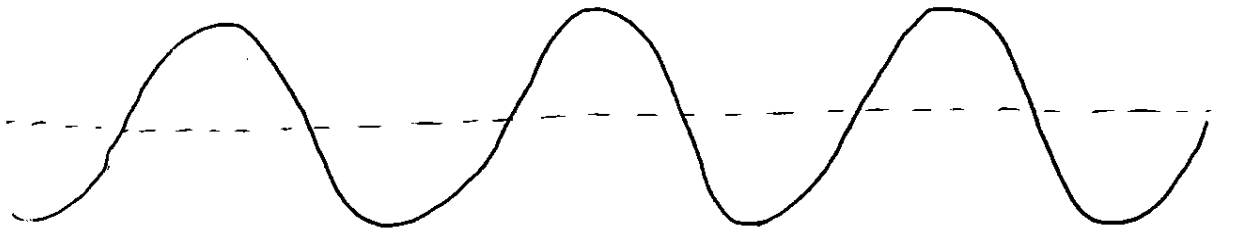

The sinusoidal curve often used to denote electromagnetic radiation represents:

A) The path of a light ray

B) The boundary of the region in which the electric and magnetic fields are nonzero

C) The strength and direction of the electric field along a line in the direction of the wave

D) Photons which oscillate up and down in the presence of a light beam

E) A snake

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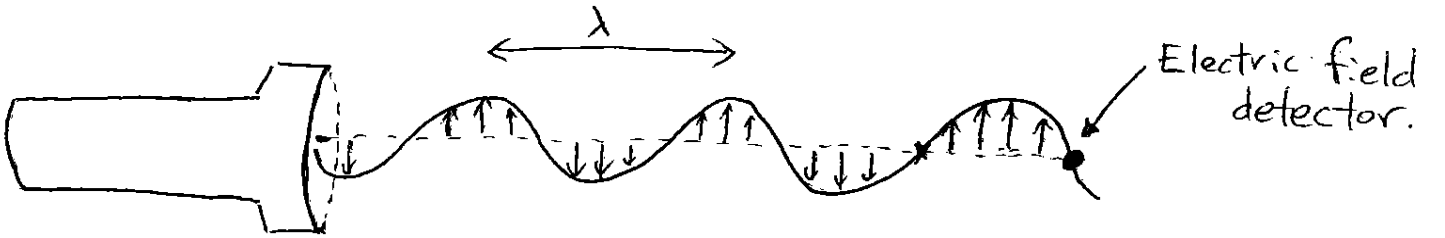


time $t = 0$

At what time will the electric field detector next read $\vec{E} = 0$?

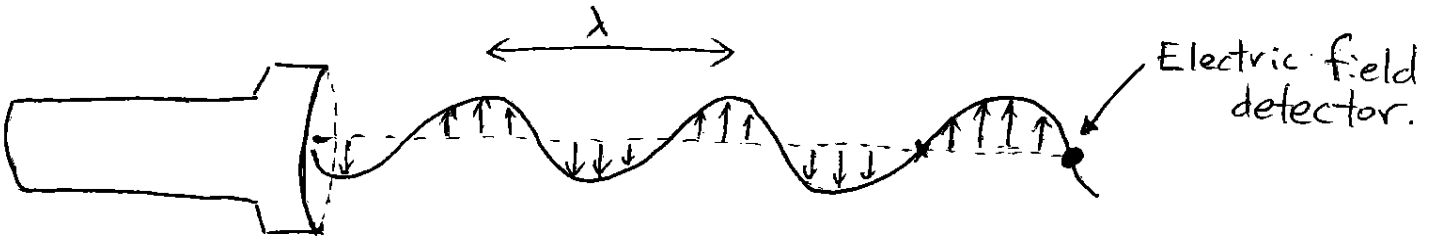
A) $\frac{1}{2}\lambda \cdot c$

B) λ / c

C) $\frac{\lambda}{2c}$

D) $\frac{2c}{\lambda}$

E) $\cos(2\pi\lambda)$



time $t = 0$

At what time will the electric field detector next read $\vec{E} = 0$?

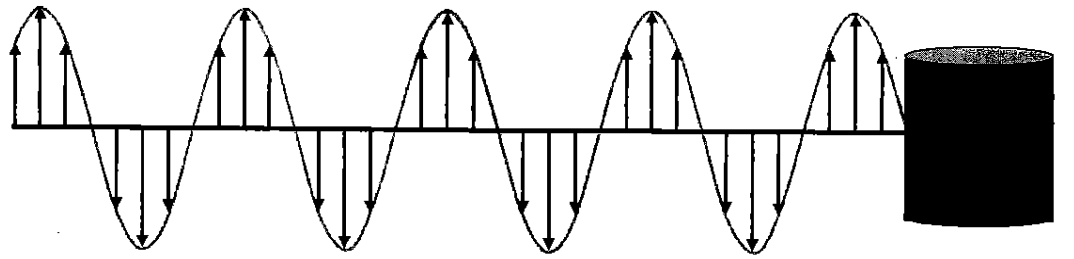
A) $\frac{1}{2}\lambda \cdot c$

B) λ / c

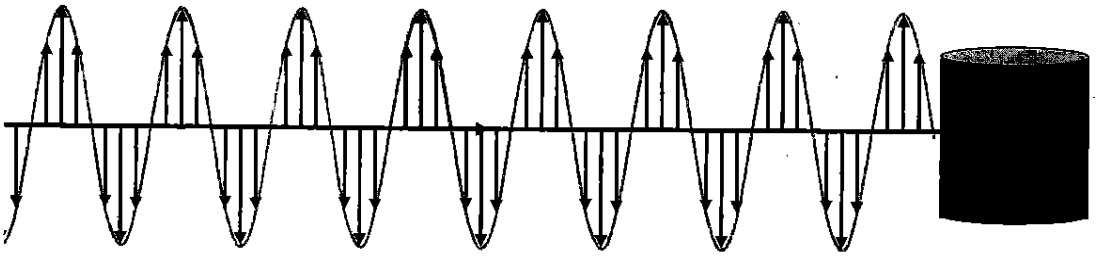
C) $\frac{\lambda}{2c}$ → needs to travel distance $\frac{\lambda}{2}$ - speed c time $\frac{\lambda}{2c}$

D) $\frac{2c}{\lambda}$

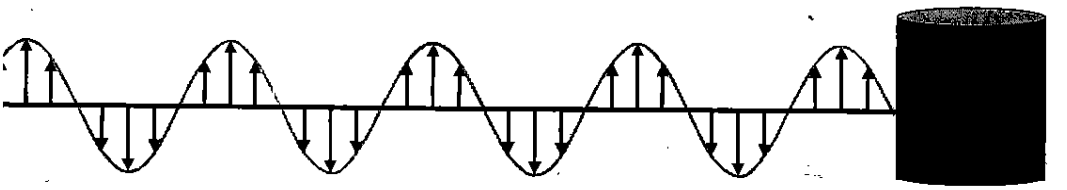
E) $\cos(2\pi\lambda)$



#1



#2

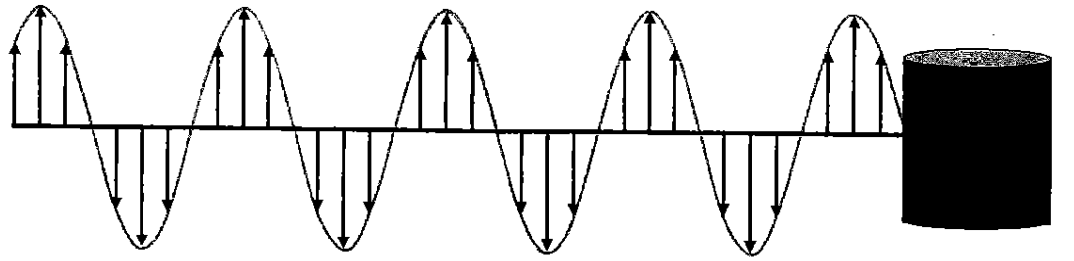


#3

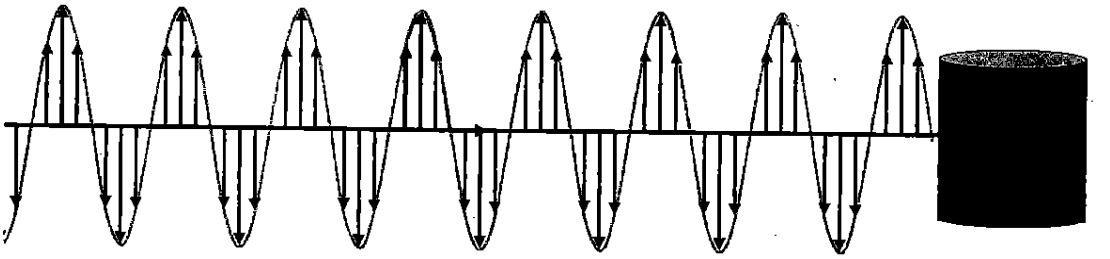
Which barrel will heat up the fastest? $E_{1max}=E_{2max}>E_{3max}$

a. 2>1>3 b. 1>2>3 c. 1=2>3

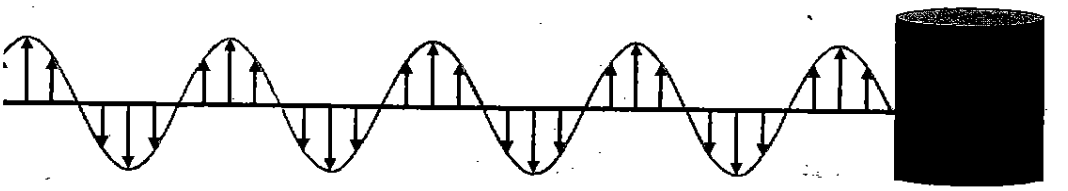
d. 1=3>2 e. 2>1=3



#1



#2



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a. 2>1>3 b. 1>2>3 c. 1=2>3

d. 1=3>2 e. 2>1=3

Energy density same for #1 and #2, less for #3
(prop to (amplitude)^2.)

Velocity same for all

∴ Amount of energy per time greatest for #1 and #2.