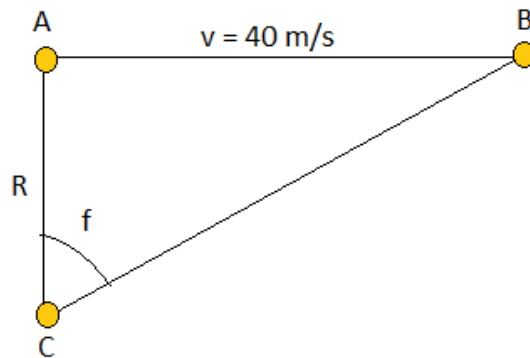


### Answer on Question #65091, Physics / Mechanics | Relativity

A racing car is travelling along a straight track at a constant velocity of 40 m/s. A fixed TV camera is recording the event as shown in figure. In order to keep the car in view, in the position shown, the angular velocity of camera should be.

**Solution:**



$$\tan(f) = AB/AC$$

$$AB = AC \times \tan(f)$$

$$\text{Where, } AC = R = 30 \text{ m, } f = 30^\circ = 0.5 \text{ rad}$$

$$\tan 30^\circ = 0.577$$

$$AB = 30 \text{ m} \times 0.577 = 17.31 \text{ m}$$

$$v = s/t$$

$$t = s/v = 17.31 \text{ m} / 40 \text{ ms}^{-1} = 0.43 \text{ s}$$

$$\omega = f/t = 0.5 \text{ rad} / 0.43 \text{ s} = 1.16 \text{ rad/s} \sim 1 \text{ rad/s}$$

**Answer: 1 rad/s**

Answer provided by <https://www.AssignmentExpert.com>