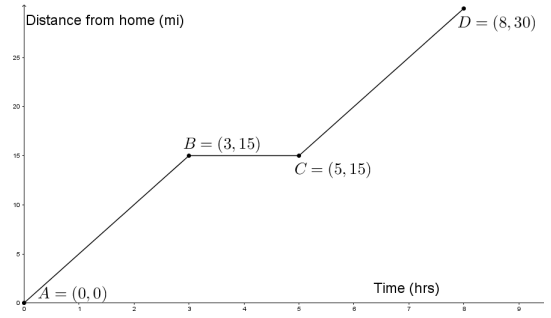
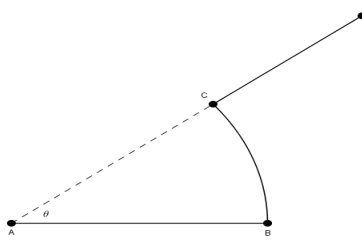


Problem 52

A boy walks to school D from home A along the path described by the first graph. $\overline{AB}, \overline{CD}$ are line segments where \overline{CD} extends through A and \widehat{BC} is a circular arc with radius AB centered at A . If the boy walks at a constant speed, find θ in radians, as described in the first graph.



Answer

$$\frac{2}{3}$$

Explanation

It is clear from the second graph that the boy's linear trip from A to B was 15 miles long and took 3 hours, as well as the circular trip from B to C took 2 hours at the same speed. So, the boy is walking at $\frac{15}{3} \Rightarrow 5 \frac{\text{mi}}{\text{hr}}$. This would imply that the arclength from B to C is $(5 \frac{\text{mi}}{\text{hr}})(2\text{hrs}) \Rightarrow 10\text{mi}$

Thus $s = r\theta$ implies that $\theta = \frac{10}{15} \Rightarrow \frac{2}{3}$