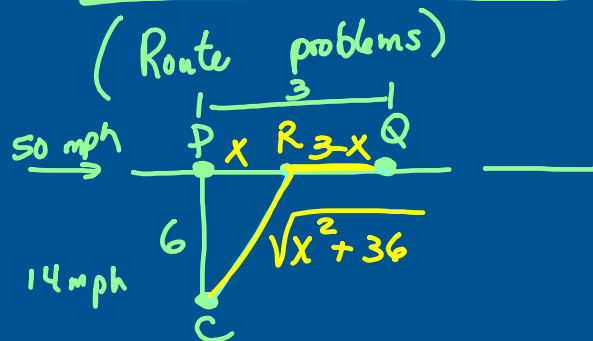


# OPTIMIZATION 3



Minimize Time

$$D = R$$

$$T = R \cdot T$$

$$D = R \cdot T$$

$$D = T$$

$$R$$

$$[0, 3]$$

$$\begin{aligned} * T &= \frac{\sqrt{x^2+36}}{14} + \frac{3-x}{50} \\ &= \frac{1}{14}(x^2+36)^{1/2} + \frac{3}{50} - \frac{1}{50}x \end{aligned}$$

$$\Rightarrow \begin{array}{r|l} 0 & 0.489 \\ 1/4 & 0.471 \\ 3 & 0.479 \end{array}$$

$$T' = \frac{1}{28}(x^2+36)^{-1/2} \cdot 2x - \frac{1}{50} = 0$$

$$\frac{x}{14\sqrt{x^2+36}} - \frac{1}{50} = 0$$

$$\frac{x}{14\sqrt{x^2+36}} = \frac{1}{50}$$

$$\frac{50x}{14} = \frac{14\sqrt{x^2+36}}{14}$$

$$\left(\frac{25}{7}x\right)^2 = \left(\sqrt{x^2+36}\right)^2$$

$$\frac{625}{49}x^2 = x^2 + 36$$

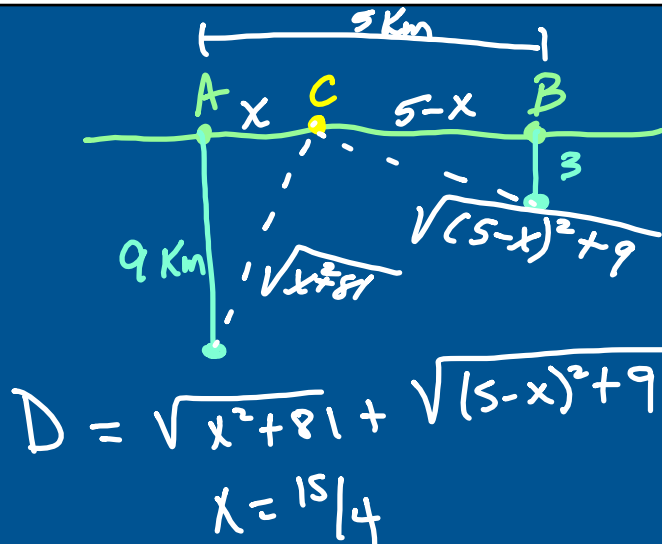
$$-\frac{49x^2}{49}$$

$$\frac{49 \cdot 876}{576 \cdot 49} x^2 = \frac{36 \cdot 49}{576}$$

$$\sqrt{x^2} = \sqrt{\frac{49}{16}}$$

$$x = \frac{7}{4}$$

R is  $1\frac{3}{4}$  mi.  
from P.



$[0, 5]$

0	14.8
15/4	13
5	13.29

C is 3.75 Km from A.