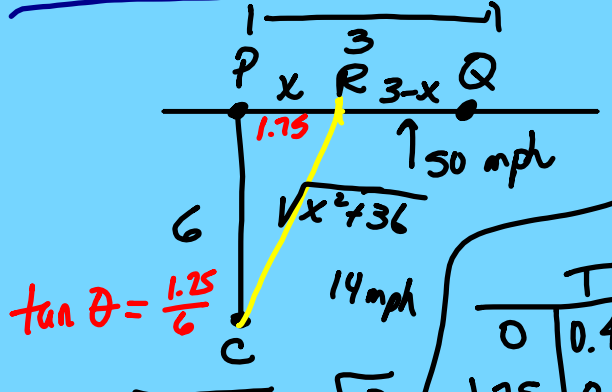
OPTIMIZATION 3

$T = \frac{D}{R}$ $[0, 3]$



$\tan\theta = \frac{1.25}{6}$

$\sqrt{x^2+36} = \sqrt{h^2}$

$\frac{x}{4} = \frac{3}{8}$

T	
0	0.489
1.75	0.471
3	0.479

$T = \frac{\sqrt{x^2+36}}{14} + \frac{3-x}{50}$

$T = \frac{1}{14}(x^2+36)^{1/2} + \frac{3}{50} - \frac{1}{50}x$

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

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

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

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

$196(x^2+36) = 2500x^2$

$196x^2 + 7056 = 2500x^2$

$-196x^2 \quad\quad -196x^2$

$\frac{7056}{2304} = \frac{2304x^2}{2304}$

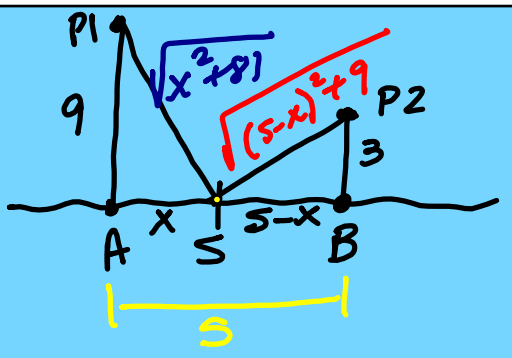
$\sqrt{\frac{49}{16}} = \sqrt{x^2}$

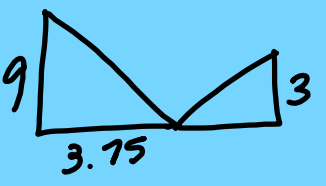
$\frac{7}{4} = x$

$1\frac{3}{4} = x$

1.75 mi from P

11





$\frac{15}{4}$

$$D = \sqrt{x^2+81} + \sqrt{(5-x)^2+9}$$

$$X = \frac{15}{4}$$

$$X = 3.75$$

$[0, 5]$

0
15/4
5