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(a) $\frac{\sin 116}{90} = \frac{\sin\theta}{80}$

$\sin\theta = \frac{\sin 116 \times 80}{90}$

$\sin\theta = 0.7989$

$\theta = 53.02$

$\angle ABC = 53.0°$

$BAC = 180 - (53 + 116)$

$= 11.0°$

~~AB=~~

AD=

$\angle ACD = 180 - 116$

$= 64°$

$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 120^2 + 80^2 - 2 \times 120 \times 80 \times \cos 64$

$= 14400 + 6400 - 8416.73$

$a^2 = 12383.27$

$a = \sqrt{12383.27}$

$= 111.3\ m.$

(b)

$\angle ECD$

$A = \frac{1}{2}ab\sin\theta$

$\sin\theta = \frac{A \times 2}{ab}$

$= \frac{2200 \times 2}{120 \times 62}$

$\frac{4400}{7440} = \sin\theta$

$\sin\theta = 0.5914$

$36.3°$

9. $r = 8m$.

(a) Maximum point $(50, 8)$

Minimum point $= (0, 2)$

$$\frac{\delta y}{\delta x} = \frac{8-2}{50-0} = \frac{6}{50}$$

equation $(t, h) \equiv (8, 2)$ $\frac{6}{50}$

$$\frac{(h-2)}{t-8} = \frac{6}{50}$$

$$50h - 100 = 6t - 48$$

$$50h - 6t = 52.$$

b $50h = 52 + 6(35)$

$50h = 52 + 210$

$50h = 262$

$h = 5.24m$

(C) $\frac{\theta}{360} \pi d$

$= \frac{270}{360} \times \frac{22}{7} \times 8$

$= 18.86m$