

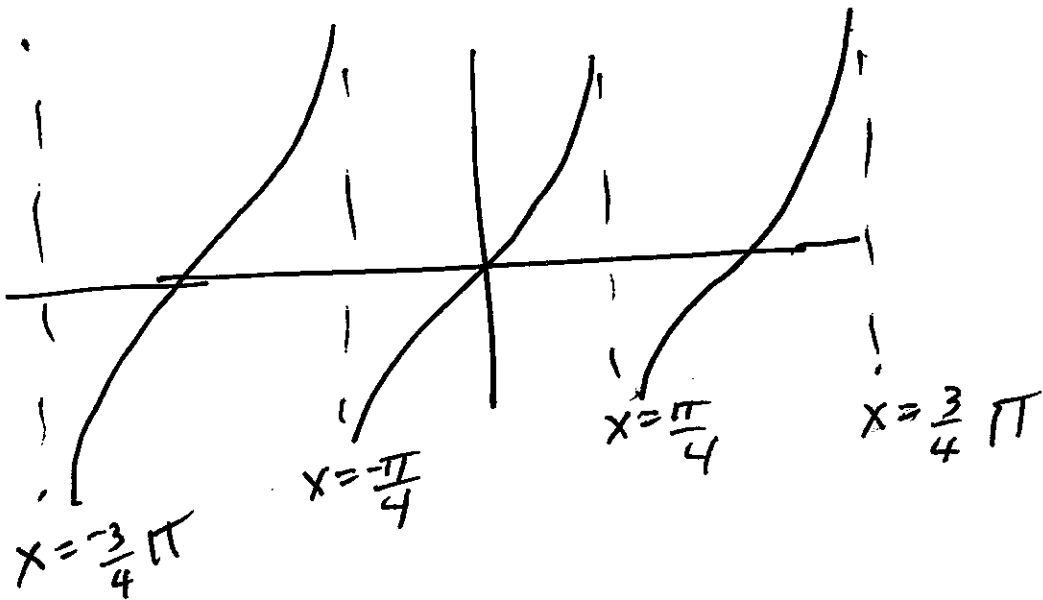
Practice

§ 5.4 sketch the graph.

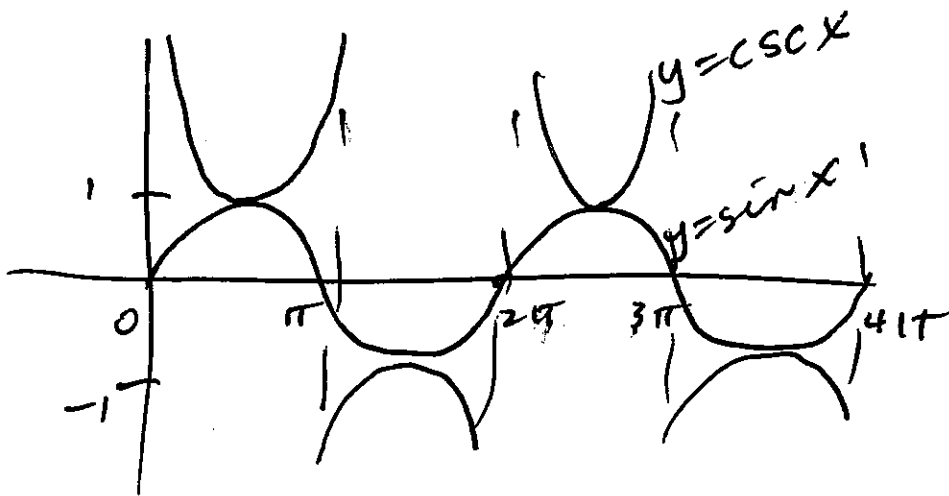
① $y = \tan 2x$

$$P = \frac{\pi}{2}$$

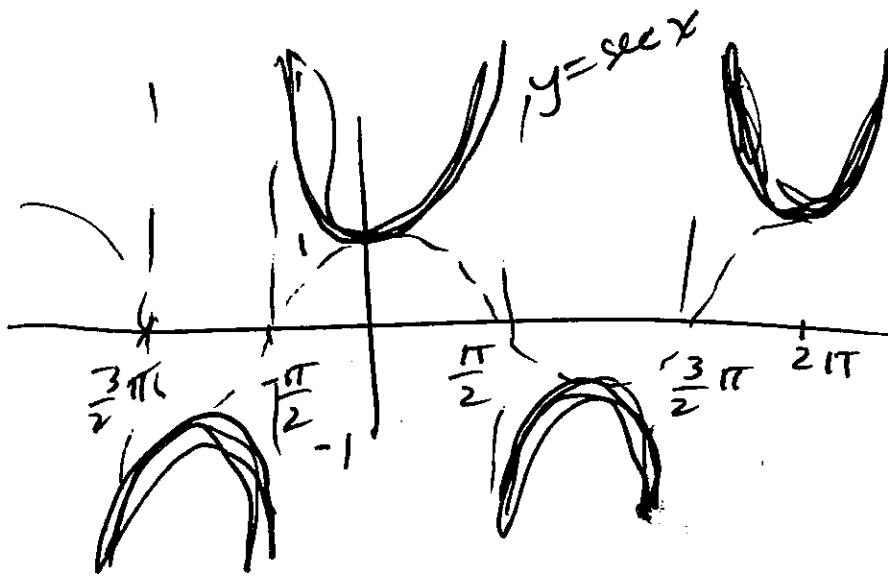
$$\text{half period} = \frac{\pi}{4}$$



② $y = \csc x$
 $= \frac{1}{\sin x}$



$$\textcircled{3} \quad y = \sec x \\ = \frac{1}{\cos x}$$

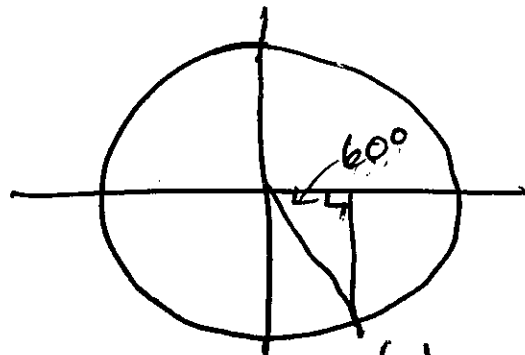


Evaluate

$$\textcircled{4} \quad \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$$

$$= \theta$$

$$\sin \theta = -\frac{\sqrt{3}}{2}, \quad -\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$



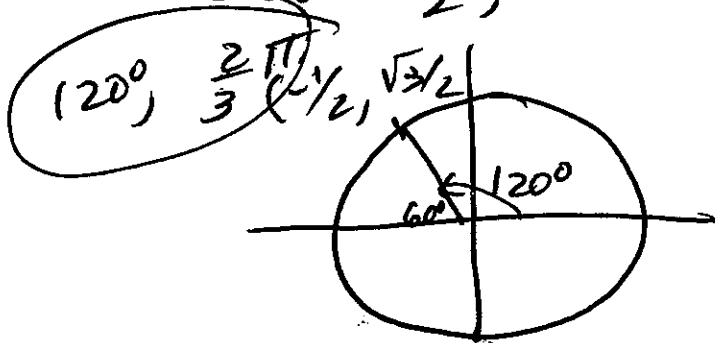
$$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$$

$$\begin{array}{l} -60^\circ \\ -\frac{\pi}{3} \end{array}$$

$$\textcircled{5} \cos^{-1}\left(-\frac{1}{2}\right)$$

$$= \theta$$

$$\cos \theta = -\frac{1}{2}, \quad 0 \leq \theta \leq \pi$$



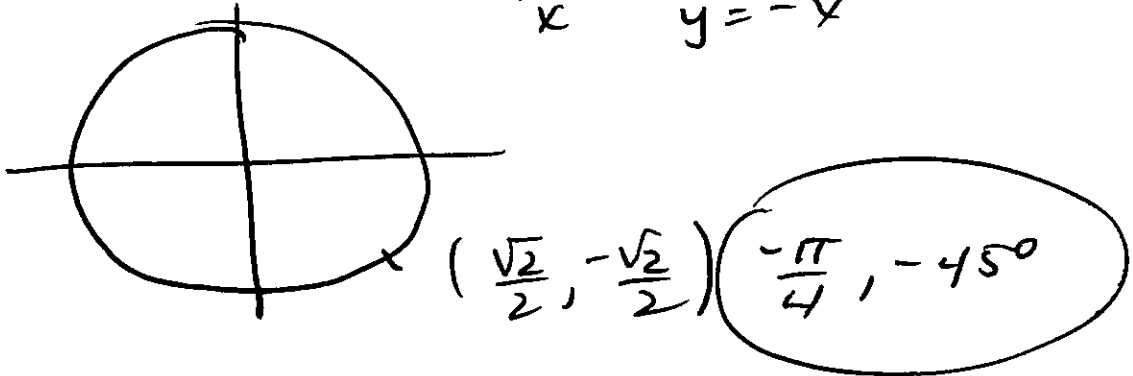
$$\textcircled{6} \tan^{-1}(-1)$$

$$= \theta$$

$$\tan \theta = -1, \quad -\frac{\pi}{2} < \theta < \frac{\pi}{2}$$

$$= \frac{y}{x}$$

$$\frac{y}{x} = -1 \quad y = -x$$



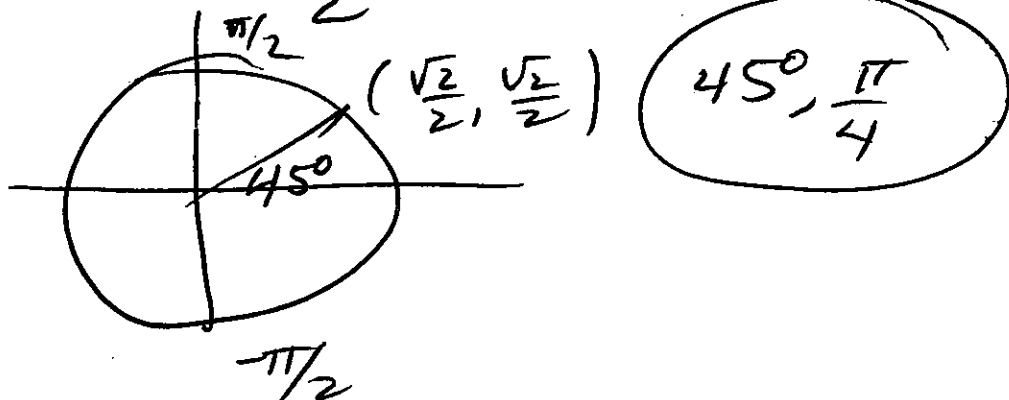
$$\textcircled{7}$$

$$\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$$

$$= \theta$$

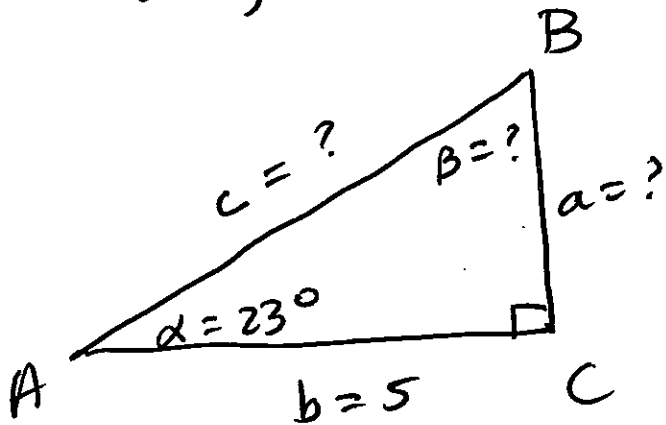
$$\sin \theta = \frac{\sqrt{2}}{2}$$

$$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$



§5.6 Solve the right triangle.

⑧ $\alpha = 23^\circ$, $b = 5$



Solve for β

$$\beta = 90^\circ - 23^\circ = 67^\circ$$

Solve for a

$$\tan \alpha = \frac{a}{b}$$

$$\tan 23^\circ = \frac{a}{5}$$

$$a = 5 \tan 23^\circ \approx 2.1$$

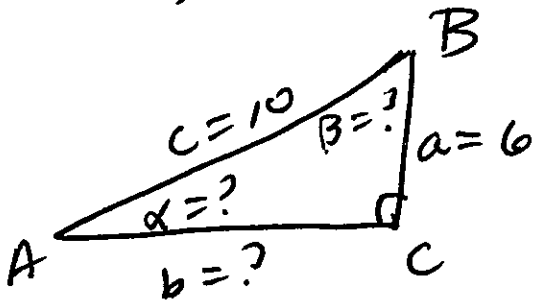
Solve for c

$$\cos \alpha = \frac{b}{c}$$

$$\cos 23^\circ = \frac{5}{c}$$

$$c = \frac{5}{\cos 23^\circ} \approx 5.4$$

① $a=6, c=10$



Find b

$$a^2 + b^2 = c^2$$

$$6^2 + b^2 = 10^2$$

$$b^2 = 10^2 - 6^2$$

$$b^2 = 100 - 36 = 64$$

$$b = 8$$

Find α

$$\sin \alpha = \frac{a}{c}$$

$$\sin \alpha = \frac{6}{10}$$

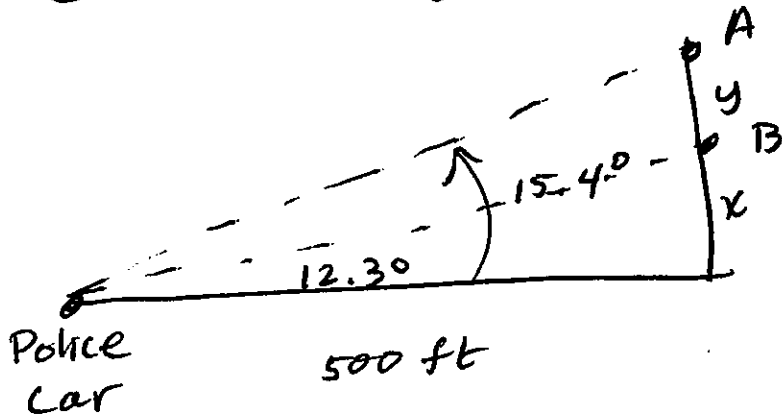
$$\alpha = \sin^{-1}\left(\frac{6}{10}\right) \approx 36.8^\circ$$

Find β

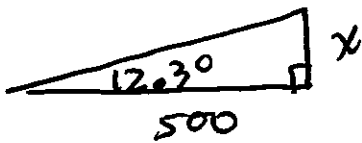
$$\beta = 90^\circ - \alpha \approx 90 - 36.8^\circ$$

$$= 53.2^\circ$$

⑩ Detecting a speeder



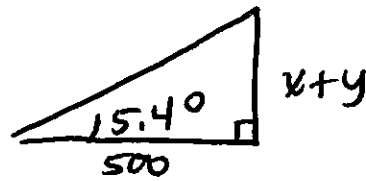
a) Find \overline{AB}



$$\tan 12.3^\circ = \frac{x}{500}$$

~~Find x~~

$$x = 500 \tan 12.3^\circ$$



$$\tan 15.4^\circ = \frac{x+y}{500}$$

$$x+y = 500 \tan 15.4^\circ$$

$$(500 \tan 12.3^\circ) + y = 500 \tan 15.4^\circ$$

$$y = 500 \tan 15.4^\circ - 500 \tan 12.3^\circ$$

$$\approx 28.7 \text{ ft.}$$

b) If it takes $t = 1.75 \text{ sec}$ for a car to go from

$$\text{Velocity} = \underline{28.7 \text{ ft}}$$

A to B, then ~~how~~ what is its velocity in mph. of the car?

SOL

$$\text{Velocity} = \frac{\text{distance}}{\text{time}} = \left(\frac{28.7 \text{ ft}}{1.75 \text{ sec}} \right) \left(\frac{1 \text{ mi}}{5280 \text{ ft}} \right) \left(\frac{60 \text{ sec}}{\text{min}} \right) \left(\frac{60 \text{ min}}{\text{hr}} \right)$$

$$\approx 11.2 \text{ mph}$$