

(5) ① Convert $26^{\circ}15'43''$
to decimal degrees.

(10) ② a) Convert 32.6° to
radians. (Use calculator.)

b) Find the central angle,
in degrees, if the radius
is 3 and the intercepted
arc has length 7.

(10) ③ a) Simplify without a
calculator:

$$\sin^2 40^{\circ} + \sin^2 50^{\circ}$$

Show all steps.

b) Use identities to find
 $\sec \theta$ if $\sin \theta = \frac{1}{4}$,
 θ acute.

Do not use a triangle.

(10) ④ a) Find $\cot(8.78)$ on
the calculator.

b) Find the exact value
of $3 \tan 30^{\circ} - \cos 45^{\circ}$.

(5) ⑤ If $a=4$, $c=7$, solve
for b, A, B . ($C=90^{\circ}$)

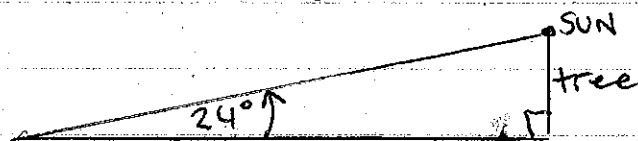
(5) ⑥ A tree casts a shadow
of 26 meters when the
angle of elevation of the
sun is 24° . Find the
height of the tree to the
nearest meter. (See picture
in next column.)

(10) ⑦ If $\cot \theta = \frac{2}{3}$, θ in Q_{III} ,
find the exact values of the
other 5 trig. functions.

(5) ⑧ Find the exact value
(radical form) of
 $\csc\left(\frac{5\pi}{3}\right)$.

(5) ⑨ Solve $\sin x = -1$
on $0 \leq x \leq 4\pi$.

Picture for ⑥



$$\textcircled{1} \quad 26 + \frac{15}{60} + \frac{43}{3600}$$

$$\approx 26.262^\circ$$

$$\textcircled{2} \text{ a) } (32.6^\circ) \left(\frac{\pi}{180^\circ} \right) \approx .569$$

$$\text{b) } s = r\theta$$

$$7 = 3\theta \Rightarrow \theta = \frac{7}{3}$$

$$\frac{7}{3} \left(\frac{180^\circ}{\pi} \right) \approx 133.69^\circ$$

$$\textcircled{3} \text{ b) } \sin \theta = \frac{1}{4}$$

(See (3a) below)

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\left(\frac{1}{4} \right)^2 + \cos^2 \theta = 1$$

$$\cos^2 \theta = \frac{15}{16}$$

$$\cos \theta = \frac{\sqrt{15}}{4}$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{4}{\sqrt{15}}$$

$$\textcircled{3} \text{ a) } \sin^2 40^\circ + \cos^2 40^\circ = 1$$

$$\textcircled{4} \text{ a) } \frac{1}{\tan(8.78)} \approx -1.3298$$

use radian mode.

$$\text{b) } 3 \left(\frac{1}{\sqrt{3}} \right) - \frac{\sqrt{2}}{2} = \sqrt{3} - \frac{\sqrt{2}}{2}$$

$$\textcircled{5} \quad b = \sqrt{49 - 16} = \sqrt{33} \approx 5.74$$

$$A = \sin^{-1} \left(\frac{4}{7} \right)$$

$$\approx 34.85^\circ$$

$$B \approx 90^\circ - 34.85^\circ$$

$$= 55.15^\circ$$

$$\textcircled{6} \quad \tan 24^\circ = \frac{x}{26}$$

(Shadow along horizontal)

$$26 \tan 24^\circ = x$$

$$x \approx 11.6 \text{ m.}$$

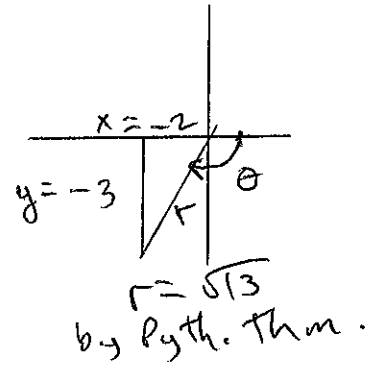
$$\textcircled{7} \quad \tan \theta = \frac{3}{2}$$

$$\sin \theta = -\frac{3}{\sqrt{13}}$$

$$\cos \theta = -\frac{2}{\sqrt{13}}$$

$$\csc \theta = -\frac{\sqrt{13}}{3}$$

$$\sec \theta = -\frac{\sqrt{13}}{2}$$



$$\textcircled{8} \quad \csc(300^\circ) = -\csc 60^\circ$$

↑
Q IV

$$= -\frac{2}{\sqrt{3}}$$

$$\textcircled{9} \quad \frac{3\pi}{2}, \frac{7\pi}{2}$$

(bottom of the unit circle)