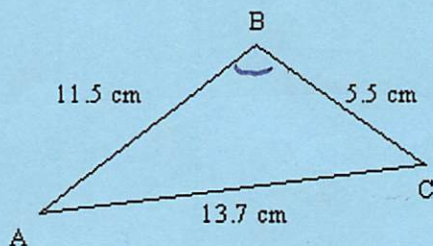


Chapter 2 TEST

Calculator Part

Short Answer

1. A drive belt wraps around three pulleys, A, B, and C, as shown.



2

Cosine Law

$$13.7^2 = 5.5^2 + 11.5^2 - 2(5.5)(11.5)\cos B$$

$$\cos B = \frac{5.5^2 + 11.5^2 - 13.7^2}{2(5.5)(11.5)} = \frac{-25.19}{126.5}$$

$$B = \cos^{-1}\left(\frac{-25.19}{126.5}\right)$$

What is the measure of  $\angle B$  to the nearest tenth?

$$B = 101.5^\circ$$

2. Determine, to the nearest tenth of a degree, the measure of  $\angle B$ .

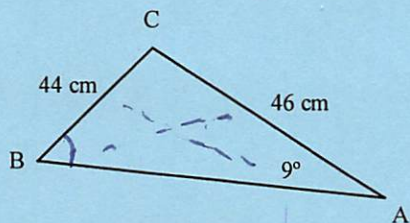


Diagram not drawn to scale.

2

$$\frac{\sin 9}{44} = \frac{\sin B}{46}$$

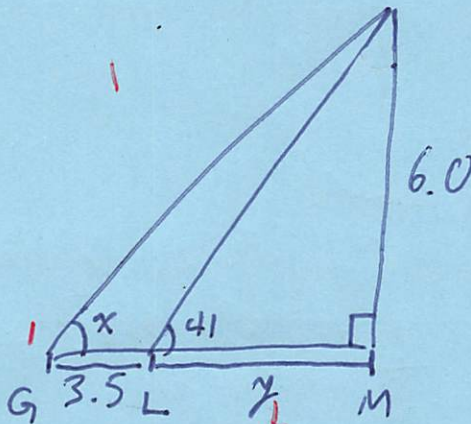
$$\frac{46 \sin 9}{44} = \sin B$$

$$B = \sin^{-1}\left(\frac{46 \sin 9}{44}\right)$$

$$B = 9.4^\circ$$



3. Gursant and Leo are both standing on the north side of a monument that is 6.0 m tall. Leo is standing 3.5 m closer to the monument than Gursant. Leo measures the angle from the ground to the top of the monument to be  $41^\circ$ . Determine the angle that Gursant would measure from the ground to the top of the monument, to the nearest degree.



$$\tan 41 = \frac{6.0}{y}$$

$$y = \frac{6.0}{\tan 41}$$

$$y + 3.5 = GM$$

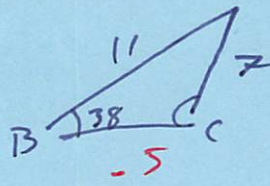
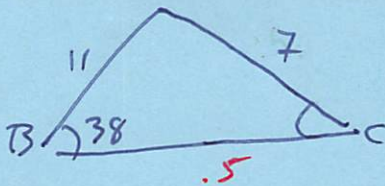
$$\tan x = \frac{6.0}{GM}$$

$$x = \tan^{-1}\left(\frac{6.0}{GM}\right)$$

$$x = 30^\circ$$

4. In  $\triangle ABC$ ,  $c = 11$  cm,  $b = 7$  cm, and  $\angle B = 38^\circ$ .

a) Sketch possible diagrams for this situation.



b) Determine the measure of  $\angle C$  to the nearest degree in each diagram.

$$\frac{\sin 38}{7} = \frac{\sin C}{11}$$

$$\sin C = \frac{11 \sin 38}{7}$$

$$C = 75.34^\circ \rightarrow \text{Acute}$$

$$\ominus R = 75.34$$

$$\text{Obtuse} \rightarrow C = 104.65^\circ$$

c) Calculate the length of BC in only one of the diagrams (the one that you choose).

$$\frac{\sin 38}{7} = \frac{\sin 66.7}{x}$$

$$.5x = 10.439$$

$$\frac{\sin 38}{7} = \frac{\sin 37.3}{x}$$

$$.5x = 6.897$$

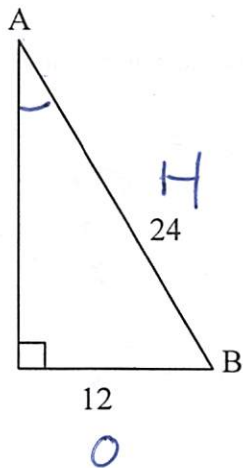
ON-Calculator Part

Multiple Choice

- 1 B 5. What is the reference angle for  $265^\circ$  in standard position?  
 A  $5^\circ$  C  $-95^\circ$   
 B  $85^\circ$  D  $65^\circ$



- 1 D 6. What is the exact value of  $\angle A$ ?



$$\sin A = \frac{12}{24}$$

$$= \frac{1}{2}$$

$$A = 30$$

- A  $60^\circ$  C  $45^\circ$   
 B  $25^\circ$  D  $30^\circ$

- 1 C 7. What is the exact value for  $\tan(150^\circ)$ ?  
 A  $\frac{1}{\sqrt{3}}$   
 B  $-\sqrt{3}$



- C  $-\frac{1}{\sqrt{3}}$   
 D  $\sqrt{3}$

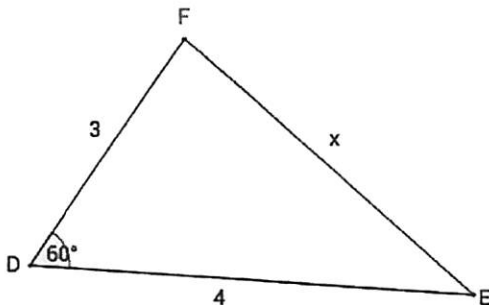
$$180 - 150 = 30^\circ$$

$$\tan = \frac{\sin}{\cos}$$

$$= \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$$

Short Answer

8. Determine the exact value of  $x$ .



$$x^2 = 3^2 + 4^2 - 2(3)(4)\cos 60$$

$$x^2 = 9 + 16 - 24\left(\frac{1}{2}\right)$$

$$x^2 = 25 - 12$$

$$x^2 = 13$$

$$x = \sqrt{13}$$



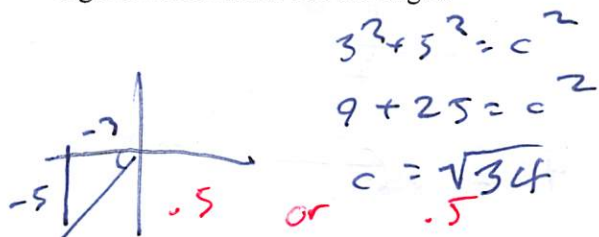
9. Determine the exact values of the following ratios and say what the reference angle is.

i)  $\cos 45^\circ = \frac{\sqrt{2}}{2} \cdot 5$  Reference angle  
 $\rightarrow 45^\circ \cdot 5$

ii)  $\tan 300^\circ = \frac{\sqrt{3}}{2} = -\sqrt{3} \cdot 5$   $\rightarrow 60^\circ \cdot 5$

iii)  $\sin 240^\circ = -\frac{\sqrt{3}}{2} \cdot 5$   $\rightarrow 60^\circ \cdot 5$

10. The point A(-3, -5) is on the terminal arm of an angle  $\theta$ . Determine exact expressions for the primary trigonometric ratios for the angle.



$3^2 + 5^2 = c^2$   
 $9 + 25 = c^2$   
 $c = \sqrt{34}$

$\sin \theta = \frac{-5}{\sqrt{34}} \cdot 5$

$\cos \theta = \frac{-3}{\sqrt{34}} \cdot 5$

$\tan \theta = \frac{-5}{-3} = \frac{5}{3} \cdot 5$

11. Solve the following equations for  $0^\circ < x < 360^\circ$ .

a)  $\cos x = \frac{1}{2}$



$\theta = 60^\circ \cdot 5$   
 or  
 $360 - 60 = 300^\circ \cdot 5$

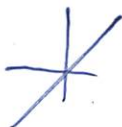


b)  $\sin x = -\frac{1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$



$\theta_R = 45^\circ$   
 $225^\circ \cdot 5$  or  $315^\circ \cdot 5$

c)  $\tan x = 1$



$\theta_R = 45^\circ \cdot 5$   
 or  
 $225^\circ \cdot 5$