

KEY

1. $x = 26.3$; $\theta = 57.7^\circ$

2. $x = 22.6'$

3. Smallest Angle = 28.1°
Area = 60

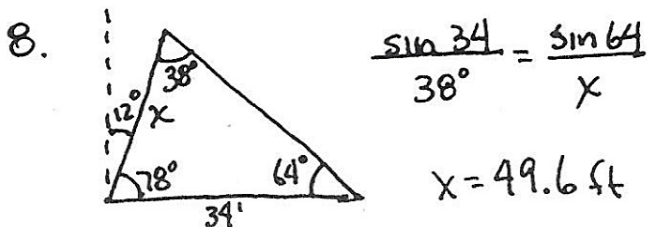
4. $\cos^2 x (\tan^2 x - \sin^2 x) = \sin^2 x - \sin^2 x \cdot \cos^2 x$
 $\sin^2 x (1 - \cos^2 x)$
 $\sin^2 x \cdot \sin^2 x$
 $\sin^4 x$

5. $\sin 30^\circ = \frac{1}{2}$
 $\cos 30^\circ = \frac{\sqrt{3}}{2}$
 $\sin 60^\circ = \frac{\sqrt{3}}{2}$
 $\cos 60^\circ = \frac{1}{2}$

$\cos 2(30) = \cos^2(30) - \sin^2(30)$
 $\cos 60 = \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{2}\right)^2$
 $\frac{1}{2} = \frac{3}{4} - \frac{1}{4}$
 $\frac{1}{2} = \frac{2}{4}$
 $\frac{1}{2} = \frac{1}{2}$

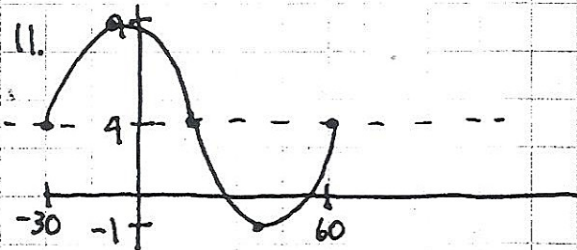
6. $2\sin x = 1$
 $\sin x = \frac{1}{2}$
 $x = \sin^{-1}\left(\frac{1}{2}\right)$
 $x = \pi/6$ or $5\pi/6$

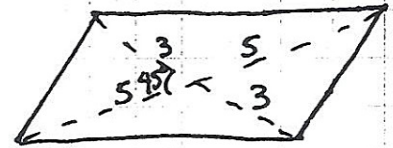
7. $1 - \cos^2 \theta + 3\cos \theta + 1 = 0$
 $-\cos^2 \theta + 3\cos \theta + 2 = 0$ let $u = \cos \theta$
 $-u^2 + 3u + 2 = 0$
 $u = -0.56$ or 3.56
 $\cos \theta = -0.56$
 $\theta = \cos^{-1}(-0.56)$
 $\theta = 124^\circ$ or 236°



9. a. x is all real
R: $y \geq -5$
b. $g^{-1}(x) = \sqrt{x+5}$
c. $x \geq -5$
d. $\sqrt{x+5} = x^2 - 5$
 $x = 2.79$

10. $\sqrt{\frac{\sin^2 x}{\cos^2 x}} = \sqrt{\tan^2 x} = a \cdot |\tan x|$



12. 
 $\Delta = \frac{1}{2} \cdot 3 \cdot 5 \cdot \sin 45^\circ = 5.3$
 $5.3 \times 4 = \underline{21.2 \text{ cm}^2}$

13. $2\cos x + \sin x = 0$
 $\frac{2\cos x}{\cos x} = \frac{-\sin x}{\cos x}$ $\rightarrow \cos x = 0$
 $2 = -\tan x$
 $-2 = \tan x$
 $\tan^{-1}(-2) = x$
 $117^\circ, 297^\circ = x$
 $x = 90^\circ$ or 270°
Neither works!

14. $75^\circ = \frac{75\pi}{180} = \frac{5\pi}{12}$

15. $\frac{1}{2} \cdot 50 \cdot 60 \cdot \sin 127^\circ = 1198$
 $\frac{1}{2} \cdot 70 \cdot 98.5 \cdot \sin 76^\circ = \frac{3345}{4543 \text{ m}^2}$

16. $\tan x \cdot \cos x = \cos x$
 $\tan x \cdot \cos x - \cos x = 0$
 $\cos x (\tan x - 1) = 0$
 $\cos x = 0$ or $\tan x - 1 = 0$
 $x = \cos^{-1}(0)$
 $x = \frac{\pi}{2}, \frac{3\pi}{2}$
 $x = \tan^{-1}(1)$
 $x = \frac{\pi}{4}, \frac{5\pi}{4}$

$$\begin{array}{r}
 17. \quad -1 \mid 1 \quad -5 \quad 4 \quad 2 \quad -8 \\
 \quad \quad \quad -1 \quad 6 \quad -10 \quad 8 \\
 \hline
 4 \mid 1 \quad -6 \quad 10 \quad -8 \quad 0 \\
 \quad \quad \quad 4 \quad -8 \quad 8 \\
 \hline
 1 \quad -2 \quad 2 \quad 0
 \end{array}$$

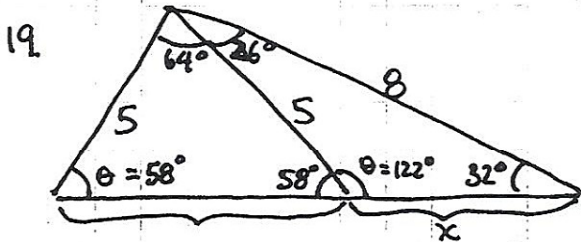
$$(x+1)(x-4)(x^2-2x+2)$$

$$18. \quad \frac{1}{(\csc x)(\sec^2 x)} = \sin x - \sin^3 x$$

$$\sin x \cdot \cos^2 x =$$

$$\sin x (1 - \sin^2 x) =$$

$$\sin x - \sin^3 x =$$



$$\frac{\sin 32^\circ}{5} = \frac{\sin \theta}{8}$$

$$\theta = 58^\circ \text{ or } 122^\circ$$

$$y^2 = 5^2 + 8^2$$

$$y = \sqrt{89}$$

$$y = 9.43$$

$$\frac{\sin 32}{5} = \frac{\sin 26}{x}$$

$$x = \boxed{4.14}$$

Between