

## Math 150 Week-in-Review 8 Answer Key

1. (a)  $\frac{10\pi}{9}$   
(b)  $225^\circ$
2.  $\frac{54}{\pi}$  ft
3. 6 in
4.  $\omega = \frac{16\pi}{5}$  rad/sec
5.  $\nu = 16800\pi$  in/min (which is actually about 50 mi/hr)
6. (a)  $40^\circ$   
(b)  $\frac{\pi}{7}$
7. (a)  $\frac{110}{\cos 10^\circ}$  ft  $\approx 111.6969$  ft  
(b)  $110 \tan 10^\circ$  ft  $\approx 19.3960$  ft
8.  $100 \tan 58^\circ + \frac{150}{\tan 43^\circ}$  OR  $\frac{100}{\tan 32^\circ} + \frac{150}{\tan 43^\circ}$  ( $\approx 320.89$  ft)
9. (a)  $\bar{\theta} = 45^\circ$  in Quadrant I;  $\csc(-315^\circ) = \sqrt{2}$   
(b)  $\bar{\theta} = \frac{\pi}{3}$  in Quadrant III;  $\sec \frac{4\pi}{3} = -2$   
(c)  $\bar{\theta} = 30^\circ$  in Quadrant IV;  $\tan 690^\circ = -\frac{\sqrt{3}}{3}$
10.  $\sin \theta = \frac{4}{7}$   
 $\cos \theta = -\frac{\sqrt{33}}{7}$ ;  $\sec \theta = -\frac{7\sqrt{33}}{33}$   
 $\tan \theta = -\frac{4\sqrt{33}}{33}$ ;  $\cot \theta = -\frac{\sqrt{33}}{4}$
11. (a)  $C = 75^\circ$ ,  $a = \frac{4}{\sin 75^\circ}$ ,  $b = 4 \tan 15^\circ$   
(b) Case 1:  $A \approx 53.36^\circ$ ,  $C \approx 89.64^\circ$ ,  $c \approx \frac{9 \sin 89.64^\circ}{\sin 37^\circ} \approx 14.95$   
Case 2:  $A \approx 126.64^\circ$ ,  $C \approx 16.36^\circ$ ,  $c \approx \frac{9 \sin 16.36^\circ}{\sin 37^\circ} \approx 4.21$   
(c)  $B = 55^\circ$ ,  $a = \frac{10 \sin 15^\circ}{\sin 55^\circ}$ ,  $c = \frac{10 \sin 110^\circ}{\sin 55^\circ}$   
(d) No Solution.  $\sin C \approx 1.36$  and this is not possible.  $\sin C$  must be between  $-1$  and  $1$ .  
(e)  $A = \cos^{-1}\left(-\frac{16}{56}\right) \approx 106.60^\circ$ ,  $B \approx 48.19^\circ$ ,  $C \approx 25.21^\circ$   
(f)  $c = \sqrt{89 - 80 \cos 77^\circ} \approx 8.43$ ,  $A \approx 35.32^\circ$ ,  $B \approx 67.68^\circ$
12. (a)  $\frac{5000 \sin 116^\circ}{\sin 42^\circ}$  ft ( $\approx 6716.13$  ft)  
(b)  $\frac{5000 \sin 116^\circ}{\sin 42^\circ} \cdot \sin 22^\circ$  ft ( $\approx 2515.91$  ft)

13.  $\sqrt{34 - 30 \cos 102^\circ}$  miles ( $\approx 6.34$  miles)

14.  $\cot u$

15. See Full Solutions for both parts

16.  $4 \tan \theta \sin \theta$