

## Math 150 Week in Review 8 Answer Key

1. (a)  $\frac{10\pi}{9}$  rad  
(b)  $225^\circ$
2.  $\frac{54}{\pi}$  ft  $\approx 17.1887$  ft
3. 6 in
4.  $\omega = \frac{16\pi}{5}$  rad/sec  $\approx 10.0531$  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  $\frac{100}{\tan 32^\circ} + \frac{150}{\tan 43^\circ}$  ft  $\approx 320.8888$  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;  $\tan 690^\circ = -\frac{1}{\sqrt{3}}$
10.  $\sin \theta = \frac{4}{7}$   
 $\cos \theta = -\frac{\sqrt{33}}{7}$ ;  $\sec \theta = -\frac{7}{\sqrt{33}}$   
 $\tan \theta = -\frac{4}{\sqrt{33}}$ ;  $\cot \theta = -\frac{\sqrt{33}}{4}$
11. (a)  $C = 75^\circ$ ,  $a = \frac{4}{\cos 15^\circ} \approx 4.1411$ ,  $b = 4 \tan 15^\circ \approx 1.0718$   
(b)  $B = \sin^{-1}\left(\frac{19 \sin 42^\circ}{22}\right) \approx 35.3020^\circ$ ,  $A \approx 102.6980^\circ$ ,  $a = \frac{22 \sin A}{\sin 42^\circ} \approx 32.0743$   
(c)  $B = 55^\circ$ ,  $a = \frac{10 \sin 15^\circ}{\sin 55^\circ} \approx 3.1596$ ,  $c = \frac{10 \sin 110^\circ}{\sin 55^\circ} \approx 11.0807$   
(d) Case 1:  $A_1 = \sin^{-1}\left(\frac{12 \sin 37^\circ}{9}\right) \approx 53.3618^\circ$ ,  $C_1 \approx 89.6382^\circ$ ,  $c_1 = \frac{9 \sin C_1}{\sin 37^\circ} \approx 14.9545$   
Case 2:  $A_2 = 180^\circ - A_1 \approx 126.6382^\circ$ ,  $C_2 \approx 16.3618^\circ$ ,  $c_2 = \frac{9 \sin C_2}{\sin 37^\circ} \approx 4.2128$
12. (a) None  
(b) None  
(c) One
13. (a)  $\frac{5000 \sin 116^\circ}{\sin 42^\circ}$  ft  $\approx 6716.1331$  ft  
(b)  $\frac{5000 \sin 116^\circ}{\sin 42^\circ} \cdot \sin 22^\circ$  ft  $\approx 2515.9078$  ft