

## Trigonometric Ratios and Equations

### Unit Review

Below are the answers to the review exercises for the unit test of trigonometric ratios and equations. You are also encouraged to review previous unit quizzes and assignments (including the worksheet on equations).

### Chapter 5 Review Problems

pg 551: 10-16, 19-22, 27-32, 35-36, 42-50, 96-100

- 10)  $\pi/12$
- 11)  $2\pi/3$
- 12)  $7\pi/4$
- 13)  $300^\circ$
- 14)  $252^\circ$
- 15)  $-150^\circ$
- 16)  $15\pi/2 = 23.56$  feet (note: use  $135^\circ = 3\pi/4$  in the arc length formula)
- 19)  $\sin \theta = 3/5$      $\csc \theta = 5/3$  (note: the hypotenuse is 5 by the Pythagorean theorem)  
 $\cos \theta = 4/5$      $\sec \theta = 5/4$   
 $\tan \theta = 3/4$ ,     $\cot \theta = 4/3$
- 20)  $\sqrt{3}/1 = \sqrt{3}$
- 21)  $1/\sqrt{2} = \sqrt{2}/2$
- 22)  $2/\sqrt{3} = 2\sqrt{3}/3$
- 27)  $\tan 23^\circ = a/100 \Rightarrow a = 42$  mm
- 28)  $\sin 61^\circ = 20/c \Rightarrow c = 23$  cm
- 29)  $\sin 48^\circ = a/50 \Rightarrow a = 37$  in
- 30)  $\sin 17^\circ = a/2640 \Rightarrow a = 772$  ft (note: 0.5 miles = 2640 feet)
- 31)  $\tan 32^\circ = d/50 \Rightarrow d = 31$  m
- 32)  $\tan \theta = 6/4 \Rightarrow \theta = 0.98279 \Rightarrow \theta = 56^\circ$
- 35) Quadrant I
- 36) Quadrant III
- 42)  $-\sin 60^\circ = -\sqrt{3}/2$
- 43)  $-\tan 60^\circ = -\sqrt{3}$
- 44)  $\sec(\pi/4) = \sqrt{2}$
- 45)  $\cos(\pi/6) = \sqrt{3}/2$
- 46)  $-\cot(30^\circ) = -\sqrt{3}$
- 47)  $-\csc(\pi/3) = -2/\sqrt{3} = -2\sqrt{3}/3$

- 48)  $-\sin(\pi/3) = -\sqrt{3}/2$   
 49)  $\sin 135^\circ = \sin 45^\circ = 1/\sqrt{2} = \sqrt{2}/2$   
 50)  $\tan(5\pi/4) = \tan(\pi/4) = 1$   
 96)  $A = 22.3^\circ \quad a = 3.79$   
        $B = 67.7^\circ \quad b = 9.25$   
        $C = 90^\circ \quad c = 10$   
 97)  $A = 52.6^\circ \quad a = 7.85$   
        $B = 37.4^\circ \quad b = 6$   
        $C = 90^\circ \quad c = 9.88$   
 98)  $A = 16.6^\circ \quad a = 2$   
        $B = 73.4^\circ \quad b = 6.71$   
        $C = 90^\circ \quad c = 7$   
 99)  $A = 21.3^\circ \quad a = 1.4$   
        $B = 68.7^\circ \quad b = 3.6$   
        $C = 90^\circ \quad c = 3.86$   
 100)  $\tan 25.6^\circ = h/80 \Rightarrow d = 38 \text{ ft}$

### Chapter 6 Review Problems

pg 608: 49-55 (solve for  $[0, 2\pi)$  only)

- 49)  $x = 2\pi/3, 4\pi/3$   
 50)  $x = \pi/4, 3\pi/4$   
 51)  $\sin x = -1/2 \Rightarrow x = 7\pi/6, 11\pi/6$   
 52)  $\tan x = 1/\sqrt{3} \Rightarrow x = \pi/6, 7\pi/6$   
 53)  $2x = \pi, 3\pi \Rightarrow x = \pi/2, 3\pi/2$   
 54)  $3x = \pi/2, 5\pi/2, 9\pi/2 \Rightarrow x = \pi/6, 5\pi/6, 3\pi/2$   
 55)  $x/2 = 3\pi/4 \Rightarrow x = 3\pi/2$