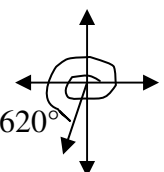


## MAT 170 Test 3 Review Answers

Please let me know if you find any incorrect answers.

### A. Angles and Radian Measures:

1. a)  $-\frac{5\pi}{4}$  b)  $270^\circ$       2. a)  $320^\circ$  b)  $\frac{\pi}{2}$       3. 16.76 cm      4.  $114.59^\circ$

5.  coterminal angles:  $260^\circ, -100^\circ$  reference angle:  $80^\circ$

### B. Trigonometric Functions

1. a)  $\cos(t) = -\frac{\sqrt{13}}{7}$        $\tan(t) = -\frac{6}{\sqrt{13}} = -\frac{6\sqrt{13}}{13}$        $\sec(t) = -\frac{7}{\sqrt{13}} = -\frac{7\sqrt{13}}{13}$   
 $\csc(t) = \frac{7}{6}$        $\cot(t) = -\frac{\sqrt{13}}{6}$   
 b)  $\sin(t) = -\frac{4}{5}$        $\tan(t) = \frac{4}{3}$        $\cot(t) = \frac{3}{4}$        $\csc(t) = -\frac{5}{4}$        $\sec(t) = -\frac{5}{3}$

2. see unit circle with values shown below

### C. Applications

1. 69.7 feet      2. 24727.3 m

### D. Reference Angle

1. a)  $30^\circ$  b)  $70^\circ$  c)  $\frac{\pi}{4}$  d)  $\frac{\pi}{3}$

### E. Graphs of Trigonometric Functions

1. a) amplitude = 2, period =  $\pi$ , phase shift =  $\frac{\pi}{4}$  to the left  
 b) amplitude = 4, period =  $\frac{2\pi}{3}$ , phase shift =  $\frac{\pi}{3}$  to the left
2.  $-5\sin\left(\frac{\pi}{3}x\right)$  or  $5\sin\left(\frac{\pi}{3}(x-3)\right)$  or  $5\sin\left(\frac{\pi}{3}(x+3)\right)$  or  $5\cos\left(\frac{\pi}{3}(x-4.5)\right)$
3. a)  $\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$  b) 3.125      8. a)  $(-\infty, -2] \cup [2, \infty)$  b)  $(-\infty, -3] \cup [3, \infty)$

### F. Inverse Trigonometric Functions

1.  $-60^\circ$  or  $-\frac{\pi}{3}$       2.  $\frac{3\sqrt{13}}{13}$       3.  $\frac{\sqrt{1-x^2}}{x}$       4.  $\frac{\pi}{3}$  or  $60^\circ$       5.  $135^\circ$  or  $\frac{3\pi}{4}$

6.  $-30^\circ$  or  $-\frac{\pi}{6}$       7.  $\frac{\sqrt{9-x^2}}{3}$       8.  $\frac{3x}{\sqrt{1-9x^2}}$

**G. Verifying Trigonometric Identities**

Methods may vary.

**H. Sum and Difference Formulas**

1.  $\frac{1}{2}$     2.  $-\frac{1}{4}\sqrt{2}(\sqrt{3}+1)$     3.  $\frac{\sqrt{3}}{3}$     27. Methods may vary.

**B. Trigonometric Functions**

**2. THE UNIT CIRCLE**

