Math 110 Common Exam #2

March 9, 2022

Time: 1 hour and 25 minutes

Instructions: Show all work for full credit.
No outside materials or calculators allowed.

Extra Space: Use the backs of each sheet
for extra space. Clearly label when doing so.

Name: _____

ID #: _____

Instructor/Section: _____

"I pledge by my honor that I have abided by the NJIT Academic Integrity Code."

_____ (Signature)

Problem		Score
1		
2		
3		
4		
5		
6		
7		
8		
9		

1. Find the reference angle for the following: (3 pts each)

   a. $215°$

   b. $-200°$

   c. $\frac{43\pi}{18}$

2. In a right triangle ABC (where C is the right angle), find $csc\ A\ if\ a\ =\ 5\ and\ b\ =\ 2\sqrt{6}$ (6 pts)

3. Find the exact value of the following or write “undefined” if no value exists: (3 pts each for a – c, 6 pts each for d – f)

   a. $\csc 780°$

   b. $sin\frac{23\pi}{4}$

   c. $sec -\frac{5\pi}{2}$

   d. $tan75°$

   e. $\cos\left(-\frac{\pi}{12}\right)$

   f. $sin\frac{\pi}{9}cos\frac{13\pi}{18} + cos\frac{\pi}{9}sin\frac{13\pi}{18}$

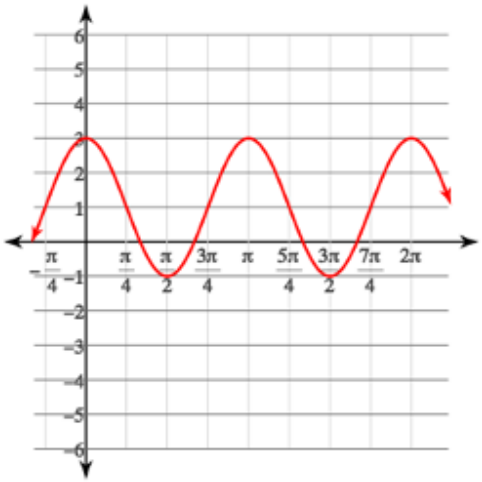
4. Graph at least 1 period the following; be sure to label at least 2 identifying points: (6 pts each)

   a. $y = 1 + 3\cos\left(3\theta + \frac{\pi}{6}\right)$

   b. $y = \frac{1}{2}\csc(2x) + 2$

   c. $y = \tan\left(\frac{x}{3} - \frac{5\pi}{6}\right)$

5. Given the graph below, find an equation in either sine or cosine. (5 pts)



6. If $csc\ \theta = 2, find \sec\left(\frac{\pi}{2} - \theta\right)$ 5 pts

7. Evaluate the following: (5 pts each)

   a. $\csc\left(tan^{-1}\left(\frac{4}{3}\right)\right)$

   b. $\arccos\left(cot\frac{\pi}{4}\right)$

8. A merry-go-round makes 8 revolutions per minute. (4 pts each)

   a. What is the angular speed of the merry-go-round?

   b. What is the linear speed of a horse that is 12 feet from the center?

9. Verify the identities: (6 pts each)

a. $\frac{tan^2x}{sin^2x} = tan^2x + 1$

b. $\cos(\theta + 90°) = -sin\theta$