

Name:_____

Student ID:_____

Section:_____

Instructor: Dr. Dang

Math 1316 (Trigonometry) Practice Test 2

Instructions:

- I strongly suggest you only use a scientific calculator such as the TI-30X IIS when you work on the multiple choice part of the practice exam because you will only be allowed a scientific calculator for the multiple choice part actual exam. Sophisticated calculators and computational tools such as graphing calculators or Wolfram Alpha will hinder the goal of this practice exam, which is a drill to prepare you for the actual exam.
- Please use no calculator at all when working on the written part because you are not allowed to use calculators on the written part of the actual exam.
- Simplify your answers as much as possible.
- For questions 16 to 21, show all your work in the space provided. justifying your answer.
- **Please write neatly.**

For Instructor use only.

#	Possible	Earned
MC	75	
16	5	
17	5	
18	10	
Sub	95	

#	Possible	Earned
19	5	
20	5	
21	5	
Sub	15	
Total	110	

Multiple Choice - CALCULATORS ALLOWED. Circle the correct answer for each question. Circle one choice only.

1. (Section 2.2) Evaluate the expression

$$4(\sin 30^\circ)(\sec 135^\circ) + \tan^2 225^\circ.$$

- a) $\frac{1 + 2\sqrt{6}}{3}$ b) $\frac{3 - 2\sqrt{2}}{2}$ c) $\frac{1 - 2\sqrt{6}}{3}$
d) $\frac{3 + 2\sqrt{2}}{2}$ e) $1 - 2\sqrt{2}$ f) $-1 + 2\sqrt{2}$

2. (Section 2.2) Find a decimal approximation for $\csc 219.44^\circ$.

- a) -0.6353 b) -1.574 c) -1.295 d) 0.8223

3. (Section 3.1) Which of the following describes the measures of all angles that are coterminal with the angle whose measure is $\frac{\pi}{8}$ radian. (Assume n is any integer)

- a) $\frac{\pi}{8} + 2n$ b) $\frac{\pi}{8} + 2n\pi$ c) $\frac{\pi}{8} + n\pi$
d) $\frac{n\pi}{8}$ e) $\frac{n\pi}{4}$ f) None of these

4. (Section 3.1) Convert the 405° to radian.

- a) $\frac{5\pi}{4}$ b) $\frac{5\pi}{2}$ c) $\frac{9\pi}{4}$
d) $\frac{9\pi}{2}$ e) $\frac{9\pi}{5}$ f) None of these

5. (Section 3.1) Convert $\frac{17\pi}{12}$ to degree.

- a) 165° b) 185° c) 245°
d) 290° e) 295° f) None of these

6. (Section 3.2) Find the measure, to the nearest degree, of the acute central angle in the figure below.

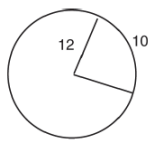


Figure 1: Figure for Question 6

- a) 22° b) 25° c) 41°
d) 48° e) 77° f) None of these

7. (Section 3.2) Find the area of the sector with central angle of 210° in a circle of radius 3.1 cm.

- a) 17.6 b) 20.8 c) 25.5
d) 32.5 e) 41.1 f) None of these

8. (Section 3.3) Give the exact value of θ in the interval $(\frac{\pi}{2}, \pi]$ such that $\tan \theta = -1$

- a) $\frac{7\pi}{8}$ b) $\frac{11\pi}{12}$ c) $\frac{5\pi}{8}$
d) $\frac{3\pi}{4}$ e) $\frac{7\pi}{4}$ f) None of these

9. (Section 3.3) Evaluate the expression

$$\cos\left(-\frac{\pi}{4} - 2000\pi\right)$$

- a) $\frac{\sqrt{2}}{2}$ b) $-\frac{\sqrt{2}}{2}$ c) $\sqrt{2}$
d) $-\sqrt{2}$ e) $-2\sqrt{2}$ f) None of these

10. (Section 4.1-4.2) Give the amplitude (A), period (P), vertical translation (V) and phase shift (PS), as applicable.

$$y = -4 + 3 \sin\left(x + \frac{\pi}{3}\right).$$

- a) $A : 3, P : 2\pi, V : 4, PS : \text{none}$
b) $A : 9, P : 3\pi, V : 4, PS : \frac{\pi}{3} \text{ to the right}$
c) $A : 1, P : 6\pi, V : -4, PS : \text{none}$
d) $A : 3, P : 2\pi, V : -4, PS : \frac{\pi}{3} \text{ to the left}$

11. (Section 4.1-4.2) An object's distance, in feet, from an equilibrium point is given by $f(t) = 100 \cos(\pi t)$ where t is in seconds. Find, to the nearest tenth of a foot, the object's distance after $t = 3.54$ seconds.

- a) 10.7 ft b) 12.5 ft c) 25.6 ft
d) 37.5 ft e) 58.8 ft f) 84.8 ft

12. (Section 4.1-4.2) Choose the graph that best describes the function in a one-period interval.

$$y = 1 - 2 \sin x.$$

Write your answer here:

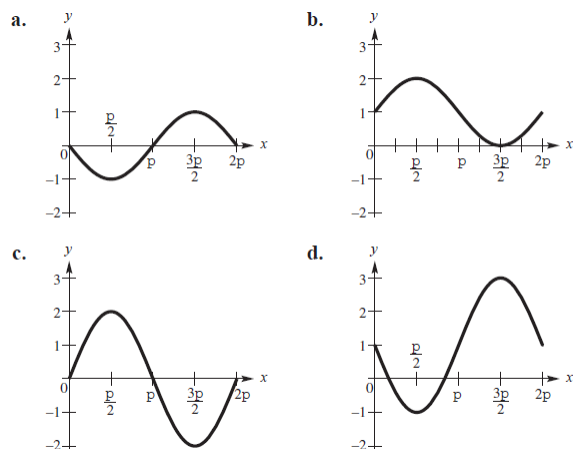


Figure 2: Figure for Question 12

13. (Section 4.1-4.2) Choose the graph that best describes the function in a one-period interval.

$$y = 3 + \sin\left(x + \frac{\pi}{4}\right).$$

Write your answer here:

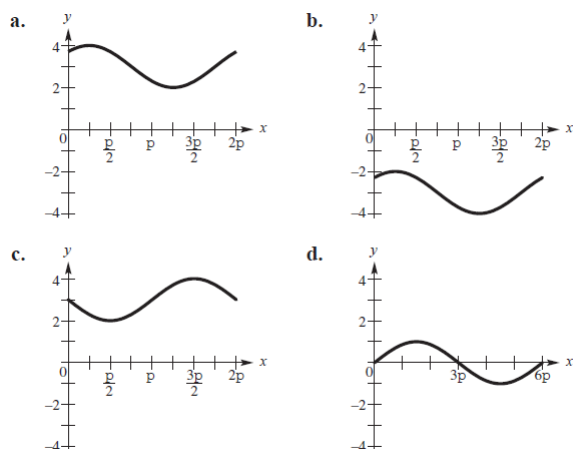


Figure 3: Figure for Question 13

14. (Section 4.3) Choose the graph that best describes the function in a one-period interval.

$$y = \tan\left(2x + \frac{\pi}{4}\right)$$

Write your answer here:

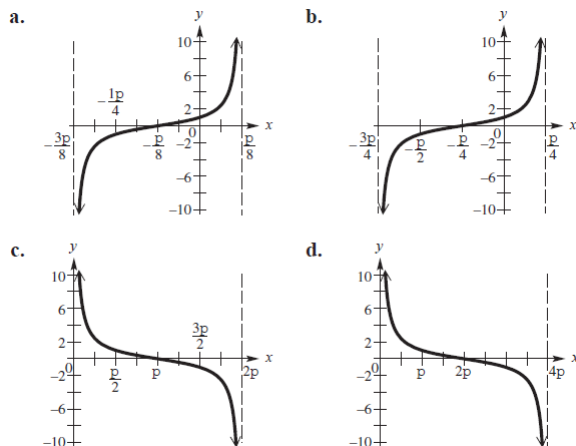


Figure 4: Figure for Question 14

15. (Section 4.3) Choose the graph that best describes the function in a one-period interval.

$$y = -\cot\left(\frac{x}{2}\right)$$

Write your answer here:

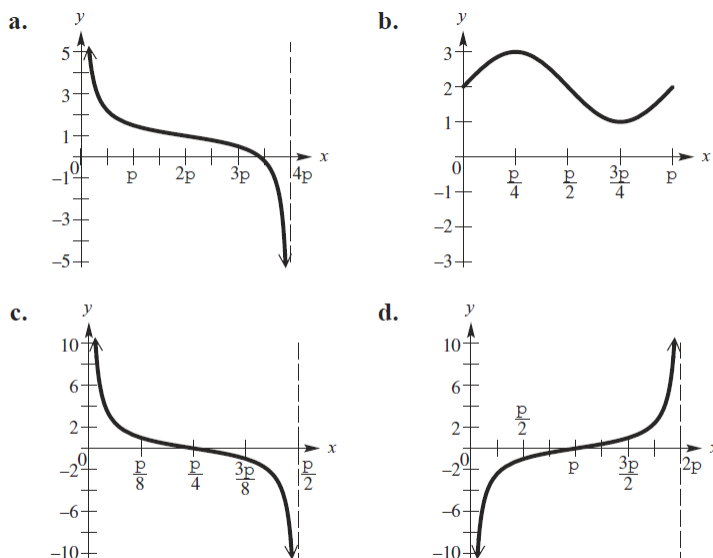


Figure 5: Figure for Question 15

Free response - **CALCULATORS NOT ALLOWED:** Show all work in the space provided. Full credit will be given only if all steps are shown justifying your answer. Please write neatly and carefully, if I cannot read your handwriting, you will receive NO credit. Scratch work will not be graded.

16. (5 points) (Section 3.1)

(a) Convert -135° to radian.

(b) Find the exact value of $\sin\left(\frac{5\pi}{3}\right)$

17. (5 points) (Section 3.2) Two gears are adjusted so that the smaller gear drives the larger one. The radius of the smaller gear is 2 cm and the radius of the larger gear is 5 cm. Through how many degrees does the larger wheel rotate if the smaller one rotates 30° . (Show all work to justify your answer)

18. (10 points) (Section 3.3)

(a) Find the exact value of $\tan \frac{5\pi}{3}$.

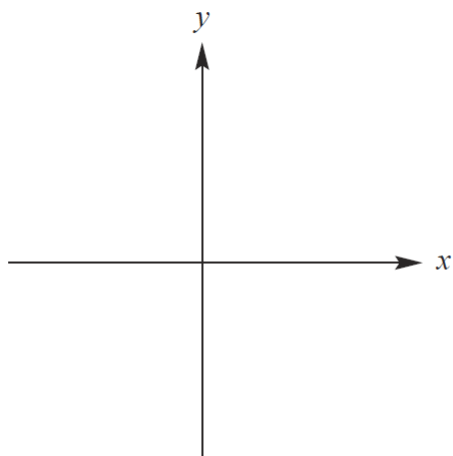
(b) Find the exact value of θ in the interval $[\frac{3\pi}{2}, 2\pi]$ such that $\sin \theta = -\frac{\sqrt{2}}{2}$.

19. (5 points) (Chapter 4) Find the amplitude, the period, any vertical translation, and any phase shift of the function.

$$y = 4 - \sin \left(6x - \frac{\pi}{2} \right)$$

20. (5 points) (Chapter 4) Graph the function over a one-period interval. Identify all the key points.

$$y = -\sin\left(x - \frac{\pi}{2}\right)$$



21. (5 points) (Chapter 4) Graph the function over a one-period interval. Identify all the key points.

$$y = 3 \tan x$$

