

**MATH-8 TEST Unit 2
SAMPLE**

100 points

NAME: _____

This test is in two parts. On part one, you may not use a calculator; on part two, a (non-graphing) calculator is necessary. When you complete part one, you turn it in and get part two. Once you have turned in part one, you may not go back to it. You will show all work on the test paper, no scratch paper is allowed.

PART ONE - NO CALCULATORS ALLOWED

(1) Find each of the following: (2 points each)

(a) $\cos (315^\circ) =$ _____

(b) $\sin (\pi) =$ _____

(c) $\tan (330^\circ) =$ _____

(d) $\cot (-\pi/2) =$ _____

(e) $\tan (90^\circ) =$ _____

(f) $\sec (\pi/4) =$ _____

(g) $\csc (390^\circ) =$ _____

(h) $\cos (7\pi/6) =$ _____

(i) $\sin (-150^\circ) =$ _____

(j) $\tan (-\pi/6) =$ _____

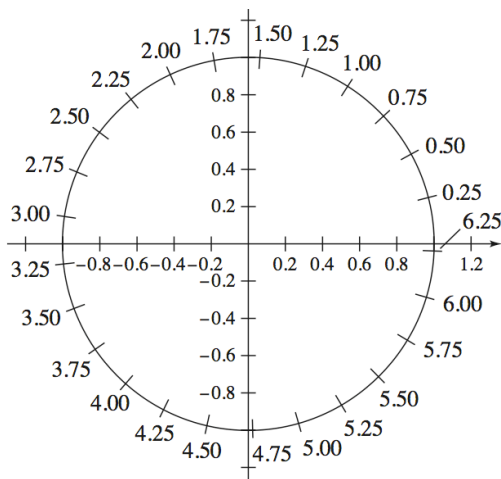
(2) Use the figure to

(4 points)

(a) approximate the value of $\sin 5$ _____ $\cos 2$ _____

(b) find a value of t such that $\cos t \approx -0.8$ _____

(c) find a value of t such that $\sin t \approx 0.4$ _____



MATH 8 Sample Test 2

PART TWO - CALCULATORS ALLOWED (non-graphing)

Show your work on this paper. EXACT answers are expected unless otherwise specified. Show scales on graphs and label highs and lows. Give units in answers when appropriate.

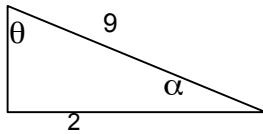
Fill in the blanks. (2 points each)

- (1) $f(t) = \cos t$ Is even, odd, or neither _____
- (2) What is the amplitude of $f(t) = -\frac{1}{2}\sin(3t + \pi) - 4$? _____
- (3) If the point $(-3, 7)$ is on the terminal side of θ , find $\sin\theta$ _____
- (4) In which quadrant, if any, is $\tan\theta < 0$ AND $\sin\theta > 0$ (both true) _____
- (5) The domain of $f(t) = \tan(t)$ is _____

(6) Using your calculator, find approximations for the following, correct to 3 decimal places. (1 point each)

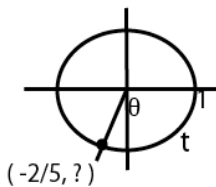
- (a) $\sec 39^\circ \approx$ _____ (b) $\tan(-3\pi/8) \approx$ _____
- (c) $\frac{4}{\tan 12^\circ + 7} \approx$ _____ (d) $\cos 4 \approx$ _____

(7) Given the following right triangle, find $\sin\alpha$, $\csc\theta$, $\tan\theta$. (1 point each)



$$\sin\alpha = \underline{\hspace{2cm}} \quad \csc\theta = \underline{\hspace{2cm}} \quad \tan\theta = \underline{\hspace{2cm}}.$$

(8) Given the unit circle below with the coordinates of $P\left(-\frac{2}{5}, ?\right)$, find $\sin\theta$, $\tan\theta$. (2 point each)

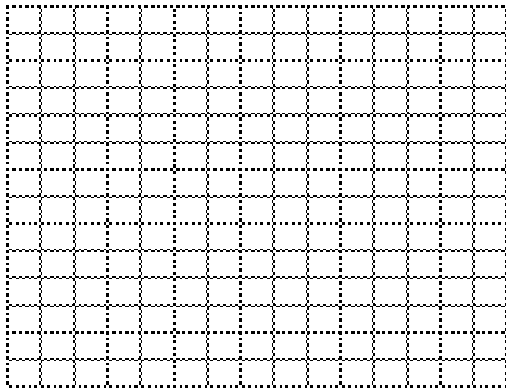


$$\sin\theta = \underline{\hspace{2cm}} \quad \tan\theta = \underline{\hspace{2cm}}$$

(9) Given $\cos\theta = \frac{-5}{13}$ and θ is in Quadrant II, find: (2 points each)

- (a) $\sin\theta =$ _____ (b) $\sec\theta =$ _____

- (10) Sketch the following graphs. (clearly show scale, graph at least one period, label coordinates of highs and lows)
 $g(x) = -2 \cos(3x)$ (4 points)

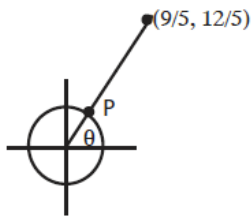


- (11) Given $\sec \theta = 3$ and $\tan \theta < 0$ find: (2 points each)

(a) $\sin \theta =$ _____

(b) $\cot \theta$ _____

- (12) Given the figure below, with point P on the unit circle, find (2 points each)

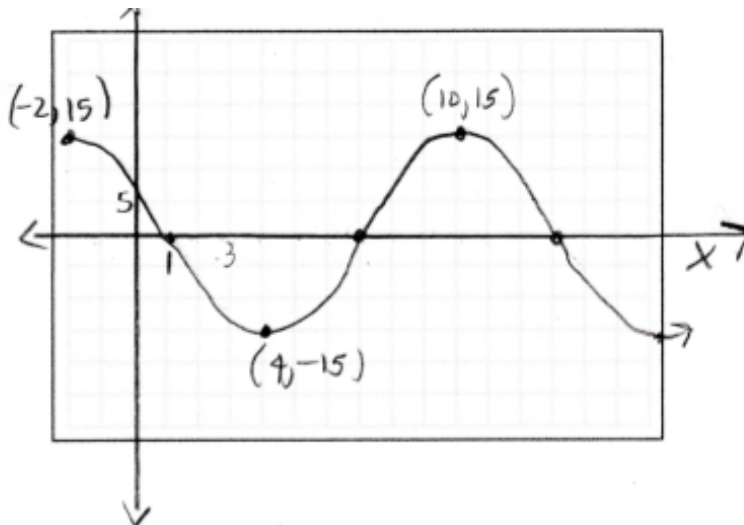


(a) $\cos \theta =$ _____

(b) $\tan \theta =$ _____

(c) coordinates of point P _____

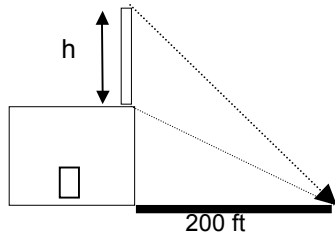
- (13) Find an equation corresponding the graph below. Check a point. (4 points)



- (14) A person sitting at the top of a 200 foot cliff at the edge of the ocean observes a ship directly offshore. The angle of depression from the person to the ship is 23 degrees. How far is the ship from shore (exact and approximate). (3 points)

- (15) At a point on the ground 200 feet from the base of a building, the angle of elevation to the bottom of a smokestack on the top of the building is 35°, and the angle of elevation to the top of the smokestack is 53°. Find the height, h, of the smokestack exactly.

(5 points)



- (16) Solve the following trig equations. If not restriction is given then find all solutions (2 pts each)

$$\tan(t) = -1 \text{ for } 0 \leq t < 2\pi \quad \underline{\hspace{2cm}}$$

$$\sec(x) = -2 \text{ for } 0 \leq x < 2\pi \quad \underline{\hspace{2cm}}$$

$$\cos(t) = \frac{\sqrt{3}}{2} \quad \underline{\hspace{2cm}}$$

$$\sin(t) = 0 \quad \underline{\hspace{2cm}}$$

$$\sin(t) = \frac{-\sqrt{2}}{2} \text{ for } \frac{-\pi}{2} \leq t \leq \frac{\pi}{2} \quad \underline{\hspace{2cm}}$$

$$\tan(t) = \sqrt{3} \text{ for } 0 \leq t < 4\pi \quad \underline{\hspace{2cm}}$$

(17) Simplify: $\frac{\tan\theta + \cot\theta}{3\sec\theta \csc\theta}$ (simplifies to a number) (2 points)

(18) Prove the following Identity $1 - \frac{\sin^2\theta}{1 + \cos\theta} = \cos\theta$ (5 points)

(19) $f(x) = 4\sin\left(\frac{1}{2}x + \frac{\pi}{6}\right)$ (6 points)

