

Math 130 - Quiz 1

August 26, 2020

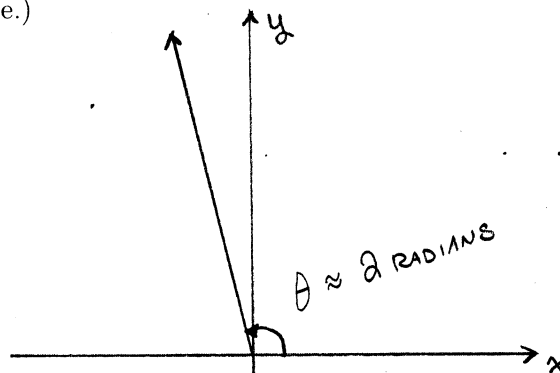
Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. This quiz is due August 31.

1. (1 point) Sketch an angle in standard position that roughly measures 2 radians. (Use a straightedge to sketch the sides, but don't attempt to measure the angle. Approximate the angle by using your knowledge of radian measure.)

2 RADIANS IS A BIT INTO
THE 2ND QUADRANT, AROUND
115°



2. (2 points) Convert to radian measure. Write your answer in terms of π .

(a) 225°

$$225^\circ \times \frac{\pi}{180^\circ} = \boxed{\frac{5\pi}{4}}$$

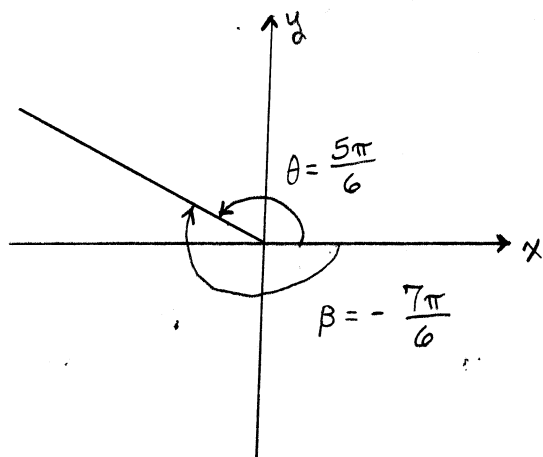
(b) -75°

$$-75^\circ \times \frac{\pi}{180^\circ} = \boxed{-\frac{5\pi}{12}}$$

3. (1 point) Convert to degree measure: $-17\pi/3$ rad

$$-\frac{17\pi}{3} \times \frac{180^\circ}{\pi} = -17 \times 60^\circ = \boxed{-1020^\circ}$$

4. (1 point) Determine the measure of an angle that is coterminal to an angle measuring $5\pi/6$ radians.



$$\boxed{-\frac{7\pi}{6}}$$

OR COULD USE

$$\frac{5\pi}{6} + 2\pi = \frac{17\pi}{6}$$

Turn over →

$$\text{RADIUS} = 60 \text{ mm}$$

5. (2 points) A CD has a diameter of 120 mm. In a CD player, it will rotate at about 200 revolutions per minute.

(a) Find the angular speed of the disc in radians per minute.

$$1 \text{ REVOLUTION} = 2\pi \text{ RADIANS}$$

$$\frac{200 \text{ REVOLUTIONS}}{1 \text{ MINUTE}} \times \frac{2\pi \text{ RADIANS}}{1 \text{ REVOLUTION}} = 400\pi \text{ RAD/min}$$
$$\approx 1256.6 \text{ RAD/min}$$

(b) Find the linear speed of a point on the edge of the disc.

$$\text{LENGTH} = \theta r \Rightarrow \text{LINEAR SPEED} = \text{ANG. SPEED} \times \text{RADIUS}$$

$$\text{LINEAR SPEED} = 400\pi \text{ RAD/min} \times 60 \text{ mm} = 24,000\pi \text{ mm/min}$$

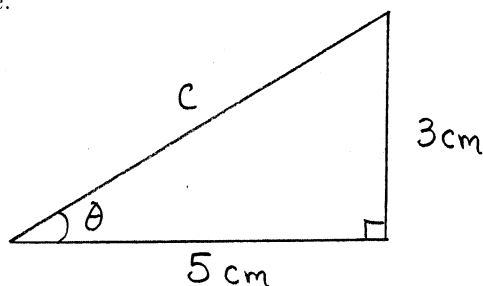
$$24\pi \text{ m/min}$$

6. (3 points) Let θ be the smallest angle in the right triangle with legs of length 3 cm and 5 cm.

(a) Find the length of the hypotenuse.

$$3^2 + 5^2 = c^2$$

$$c = \sqrt{34} \text{ cm}$$



(b) Determine the values of all six trigonometric functions at θ .

$$\sin \theta = \frac{3}{\sqrt{34}}$$

$$\csc \theta = \frac{\sqrt{34}}{3}$$

$$\cos \theta = \frac{5}{\sqrt{34}}$$

$$\sec \theta = \frac{\sqrt{34}}{5}$$

$$\tan \theta = \frac{3}{5}$$

$$\cot \theta = \frac{5}{3}$$