MRS22 – Algebra 2/Trigonometry
Exam 2 Review Sheet

Topics:

- Angles in Standard Position, Angles as Rotations, Coterminal Angles, Quadrantal Angles
- Reciprocal Trig Functions
- The Unit Circle
- Reference Angles
- Trig Functions of Special Angles (30°, 45°, 60°)
- Signs of Trig Functions in Different Quadrants (A–S–T–C)
- Cofunctions
- Radian Measure, Converting Radians and Degrees
- Arc Length
- Trig Functions of Angles in Radian Measure

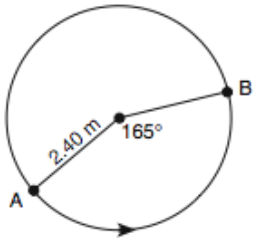
Be sure to thoroughly prepare for the exam by reviewing (and re-doing) problems in your class notes and homework assignments.

Note that exams are **cumulative**, meaning that some questions on this exam will cover topics that were tested on previous exams.

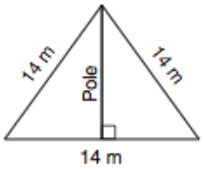
Graphing calculators will be provided during this exam.

Practice Problems:

1. The accompanying diagram shows the path of a cart traveling on a circular track of radius 2.40 meters. The cart starts at point A and stops at point B, moving in a counterclockwise direction. What is the length of minor arc AB, over which the cart traveled? Express your answer in simplest form in terms of π.



2. The accompanying diagram shows two cables of equal length supporting a pole. Both cables are 14 meters long, and they are anchored to points in the ground that are 14 meters apart.



What is the exact height of the pole, in meters?

(1) 7
(2) $7\sqrt{2}$
(3) $7\sqrt{3}$
(4) 14

3. An art student wants to make a string collage by connecting six equally spaced points on the circumference of a circle to its center with string. What would be the radian measure of the angle between two adjacent pieces of string, in simplest form?

4. As the pendulum of a clock swings through an angle of 70º, the tip of the pendulum travels along an arc whose length is 2π inches. Find the length of the pendulum.

5. If $\sin A > 0$ and $(\sin A)(\cos A) < 0$, in which quadrant does $\angle A$ terminate?

(1) I
(2) II
(3) III
(4) IV

6. Solve for x if $0° < x < 90°$: $\tan(4x - 13)° = \cot(x + 48)°$

7. An angle of $\frac{7\pi}{3}$ radians is coterminal with an angle of

(1) 120°
(2) 240°
(3) –420°
(4) 60°

8. If $\csc x = -0.657$ and $\sec x > 0$, then angle x terminates in Quadrant

(1) I (3) III

(2) II (4) IV

9. Through how many radians does the minute hand of a clock turn in 24 minutes?

(1) $\frac{\pi}{5}$ (3) $\frac{3\pi}{5}$

(2) $\frac{2\pi}{5}$ (4) $\frac{4\pi}{5}$

10. *a*. Convert to radians and express in simplest form: 315°

b. Convert to degrees and express in simplest form: $\frac{11\pi}{9}$

11. Express as a function of a positive acute angle:

a. $\cot(-459°)$

b. $\sec 935°$

c. $\sin\frac{7\pi}{10}$

12. Express as a function of a positive acute angle less than 45°:

a. $\sin 245°$

b. $\sec 98°$

c. $\cos 355°$

13. Find the exact value:

a. $\sin 315°$ *b*. $\csc 150°$ *c*. $\cot 180°$

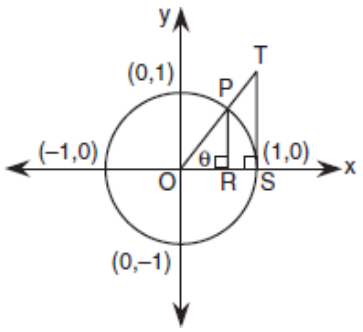
14. Find the exact value in simplest radical form:

a. $\sin\frac{11\pi}{6}$ *b*. $\cot\left(-\frac{5\pi}{3}\right)$ *c*. $\cos\frac{7\pi}{4}$

15. In the accompanying diagram, $\overline{TS}$ is tangent to unit circle O at S, $\overline{PR} \perp \overline{OS}$, and $\overline{TS} \perp \overline{OS}$. Which line segment represents $\sin\theta$?

(1) $\overline{OR}$

(2) $\overline{OS}$

(3) $\overline{TS}$

(4) $\overline{PR}$