

## MATH 2312 Test 2 Review

Students are responsible for reserving a seat for the test using **Schedule Exams** tab on CASA BEFORE the first day of test while seats are available. You take your test in a **CASA Testing Center**.

If you miss your scheduled test, then check the scheduler to see if there are other available times and if you can reschedule it. Your instructor does not control the scheduler, cannot add test slots, and/or reschedule your test – make sure you do not miss your reserved time.

### FAQ

- ✓ **What is covered on the test?** Chapter 4.
- ✓ **How many questions are there?** 17 Multiple-choice questions to be completed in 60 minutes.
- ✓ **What calculator can I use on exams?** No calculators or other software are allowed on exams – study accordingly.
- ✓ **Will there be a formula sheet provided?** No formula sheets are allowed. You canNOT have a copy of a unit circle while taking the test – make sure you know your unit circle.
- ✓ **How do I study for the best result?**
  1. Begin with this review. SOLVE a blank copy of this review after it is discussed in class!
  2. Take Practice Test 2 BEFORE your test! It is for practice AND extra credit. 5% of your best score will be added to your Test 2 score. Retake Practice Test 2 several times to strengthen your skills.
  3. Review online quizzes and homework.

While this review covers most of the “skills” you should be practicing it is not intended to be the only resource you use when you prepare for the test.

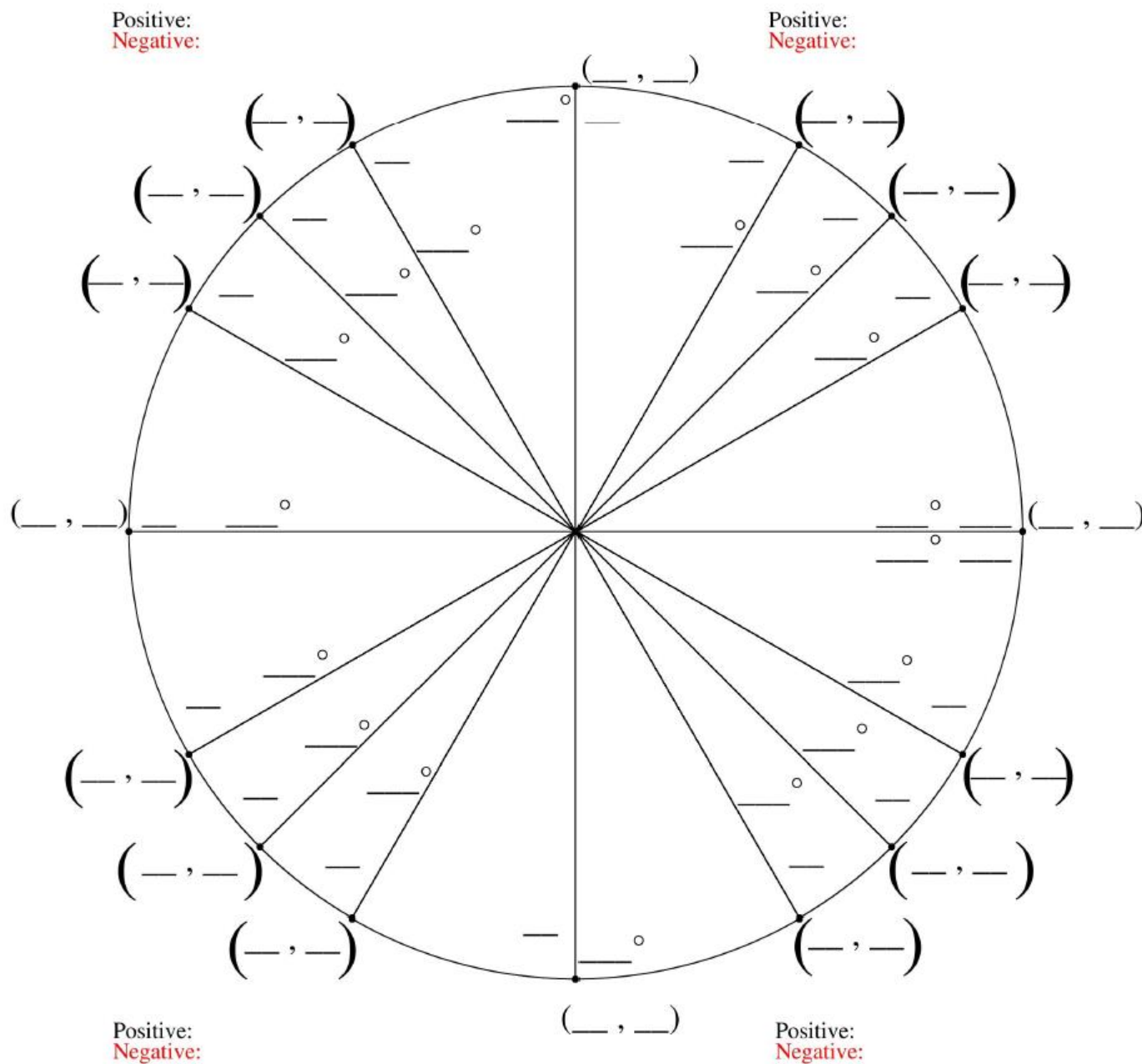
1. Convert the following degree measures to radians.

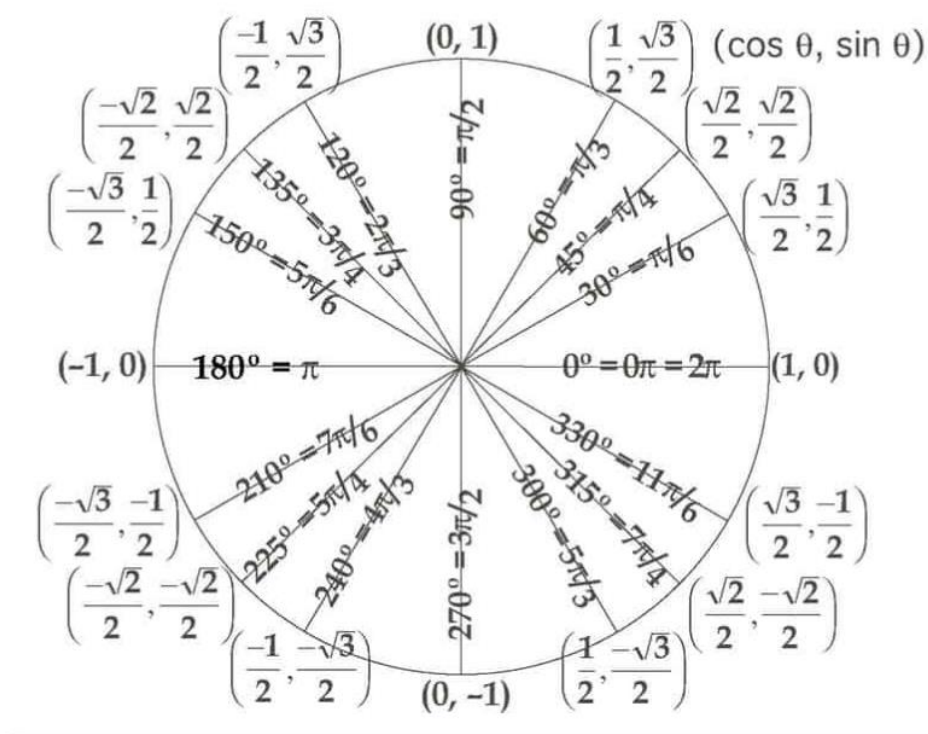
$$120^\circ$$

2. Convert the following radian measures to degrees.

$$\frac{5\pi}{6}$$

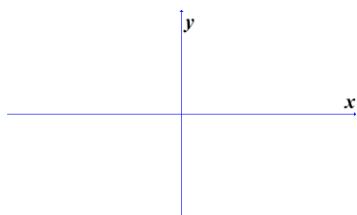
KNOW YOUR UNIT CIRCLE! It will **not** be provided on the test.



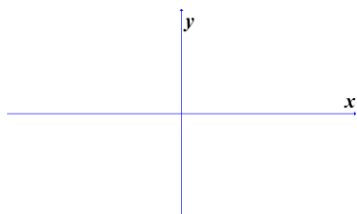


3. Evaluate the following if possible.

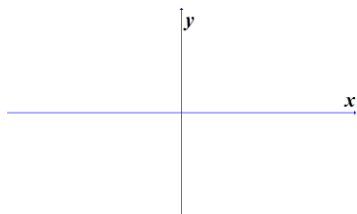
a.  $\sin(300^\circ)$



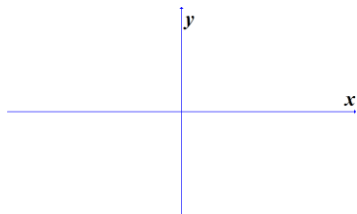
b.  $\tan\left(\frac{3\pi}{4}\right)$



c.  $\sec(150^\circ)$



d.  $\csc\left(\frac{-2\pi}{3}\right)$



4. Mark all expressions that are undefined.

$\sin(180^\circ)$

$\cot\left(\frac{\pi}{2}\right)$

$\tan\left(\frac{3\pi}{2}\right)$

$\cos(90^\circ)$

$\tan(90^\circ)$

$\cot(180^\circ)$

5. A car has wheels with a 10-inch radius. If each wheel's rate of turn is 4 revolutions per second, then how fast is the car moving in units of inches/sec?

**Recall:**  $\omega = \frac{\theta}{t}$ ,  $\theta$  is in radians!

$$v = r\omega$$

6. Find the area of the sector of a circle with central angle

a.  $\theta = 225^\circ$  and radius  $r = 4 \text{ ft}$ .

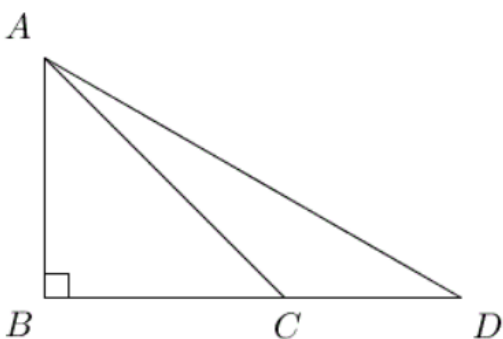
b.  $\theta = \frac{5\pi}{3}$  and radius  $r = 30 \text{ in}$ .

**Recall:**  $A = \frac{1}{2}r^2\theta$ ,  $\theta$  is in radians!

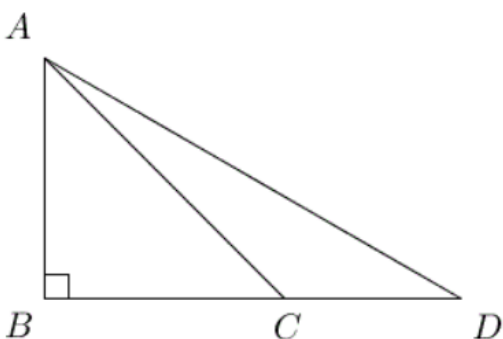
KNOW YOUR SPECIAL TRIANGLES!  $30^\circ - 60^\circ - 90^\circ$   $45^\circ - 45^\circ - 90^\circ$

7.

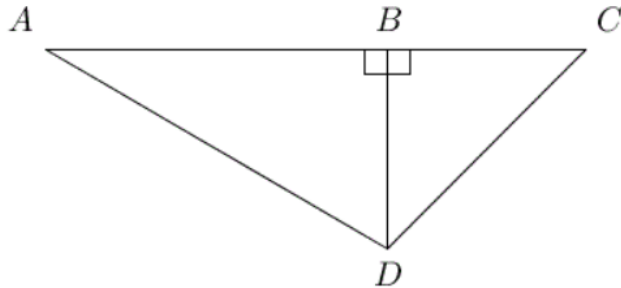
- a. In the figure below, angle B is a right angle,  $m(D) = 30^\circ$  and  $m(ACB) = 60^\circ$ . If  $AC = 8$ , find the length of  $AD$ .



- b. In the figure below, angle B is a right angle,  $m(D) = 45^\circ$  and  $m(ACB) = 60^\circ$ . If  $AC = 10$ , find the length of  $AD$ .



- c. In the figure below, segment  $BD$  is an altitude in triangle  $ADC$ ,  $m(A) = 30^\circ$  and  $m(C) = 45^\circ$ . If  $CD = 20$ , find the lengths of  $AB$  and  $AD$ .



#### KNOW TRIANGLE FACTS!

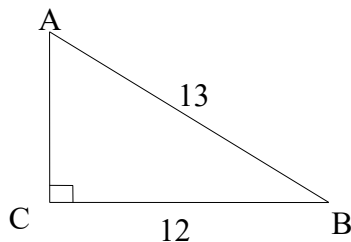
- The **sum of the three angles** of a triangle add up to  $180^\circ$ .
- **If one side of a triangle is longer** than another **side**, then the angle opposite the **longer side** will have a **greater** degree measure than the angle opposite the **shorter side**.
- Pythagorean theorem  $a^2 + b^2 = c^2$  and Pythagorean triples

(3, 4, 5)  
(6, 8, 10)

(5, 12, 13)  
(7, 24, 25)

(8, 15, 17)

8. Find the missing side and then find  $\cos$  and  $\tan$  of the smallest angle in the triangle.

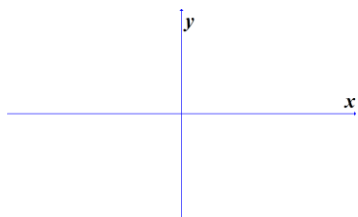


9. Given a triangle  $ABC$  with right angle  $C$ ,  $AC = 6$  and  $AB = 9$ . Find all six trigonometric functions of angle  $A$ .



10. Let  $P(x, y)$  denote the point where the terminal side of an angle  $\theta$  meets the unit circle.

If  $P$  is in Quadrant IV and  $x = \frac{4}{5}$ , evaluate  $\sin \theta + \sec \theta$



11. Given  $\cos \theta = -\frac{4}{5}$  and  $\tan \theta > 0$ , find  $\csc \theta$ .

12. Given  $\tan \theta = -\frac{3\sqrt{2}}{4}$  and  $\sin \theta < 0$ , find  $\cos \theta$ .

13. Simplify the following expressions.

a.  $8 \sin^2 x - 5 \sec x \cot x + 8 \cos^2 x$

b.  $3 \sin^2 x + \frac{3 \tan x \cot x}{1 + \tan^2 x}$

c.  $\frac{\sin x}{1 - \cos x} + \frac{\sin x}{1 + \cos x}$

14.

a. If  $\tan x = 3$ , then  $\sec^2 x - 5 \sin x \csc x =$

b. If  $\tan x = \frac{2}{3}$ , then  $4 - 4 \sin^2 x =$

15. Evaluate the following.

a.  $4 \sin(120^\circ) + 6 \cos(210^\circ) =$

b.  $4 \sec(60^\circ) + 8 \csc(150^\circ) =$

c.  $10 \tan\left(\frac{5\pi}{4}\right) - 8 \cot\left(\frac{3\pi}{4}\right) + 5 \cos(2\pi) =$

d.  $5 \cot\left(\frac{5\pi}{6}\right) + 7 \sin\left(\frac{11\pi}{6}\right) =$