Practice for Test 3

Math 130 *Kovitz* Spring 2019: the test is on Tuesday, May 9.

True or false:

1. Because $\pi/12$ is one twelfth of a complete revolution, it will be the same as 30 degrees.

2. In a circle with radius 6 inches, the arc opposite a central angle of 5 degrees is 30 inches.

3. A wheel that rotates at 90 revolutions per minute has an angular speed of 3π radians per second.

4. A point on the rim of a wheel with a radius of 1 foot that is rotating at 1 revolution per minute is travelling around the rim of the wheel at a rate of 2π feet per minute.

5. In the unit circle, an arc of length $\pi/4$ subtends a central angle of 45 degrees.

6. A right triangle with tangent equal to $\sqrt{7}/3$ will have a secant of $4/3$.

7. A right triangle in which the side adjacent to an angle of 30 degrees has length $\sqrt{3}$ will have a hypotenuse of length $2\sqrt{3}$.

8. In any right triangle, subtracting 1 from the square of the secant yields the square of the tangent.

9. In a particular right triangle, the defining ratios of the cotangent and the cosecant have the same side for their denominators and the cosecant is the larger ratio.

10. The sine of 11 degrees is about 0.19, so the cosine of 79 degrees is also about 0.19.

11. The length of the diagonal in a square with sides of length one is the same as the length of the hypotenuse of an isosceles right triangle with legs of length one; so it is $\sqrt{2}$.

12. A right triangle with sine equal to 0.96 and cosine equal to 0.28 will have tangent equal to $\dfrac{0.96}{0.28} = \dfrac{96}{28} = \dfrac{24}{7}$.

13. On a unit circle in standard position the sine of the angle (or arc) is the first coordinate of the terminal point.

14. The points on the unit circle with standard positions of $3\pi/4$ and $5\pi/4$ lie at the ends of a diameter.

15. $\cos(\pi) = -1$.

16. The point for $\pi/3$ on the unit circle will have coordinates $\left(\sqrt{3}/2, 1/2\right)$.

17. $2\pi/3$ is the supplement of $\pi/3$, so the cosine of $2\pi/3$ is minus the cosine of $\pi/3$, making the cosine of $2\pi/3$ equal to $-1/2$.

18. If the sine is positive and the cosine is negative, the terminal point must be in the 4th quadrant.

19. The midpoint of the first-quadrant arc of the unit circle has coordinates $\left(\sqrt{2}/2, \sqrt{2}/2\right)$ and its angle in standard position is $\pi/4$.

20. The cosine is an odd function and has an intercept at $(\pi/2, 0)$.

21. The functions $y = \sin x$ and $y = \cos x$ have the same period: 2π.

22. The graph of $y = \cos x$ has an x-intercept at $(\pi, 0)$.

23. The graph of $y = \sin x$ is one-to-one.

24. If you multiply an angle by -1, you multiply its cosine by -1.

25. The sine of the supplement is equal to the sine of the original.

Please refer to separate file for Practice for the Bonus Question.

Answers follow.

Answers.

1. False.
2. False.
3. True.
4. True.
5. True.

6. True.
7. False.
8. True.
9. True.
10. True.

11. True.
12. True.
13. False.
14. False.
15. True.

16. False.
17. True.
18. False.
19. True.
20. False.

21. True.
22. False.
23. False.
24. False.
25. True.