Intro to Trig Review Sheet

Name: Key   Date: ____________

1. Using the identity $\sin^2\theta + \cos^2\theta = 1$, find the value of $\tan\theta$, to the *nearest hundredth*, if $\sin\theta$ is $\frac{1}{6}$ and θ is in Quadrant II.

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$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{\frac{1}{6}}{-.98601}$ $= \boxed{-.17}$

$\left(\frac{1}{6}\right)^2 + \cos^2\theta = 1$

$\cos^2\theta = .97222$

$\cos\theta = .98601$

2. Using the identity $\sin^2\theta + \cos^2\theta = 1$, find the value of $\tan\theta$, to the *nearest hundredth*, if $\cos\theta$ is -0.7 and θ is in Quadrant II.

$\sin^2\theta + (-.7)^2 = 1$

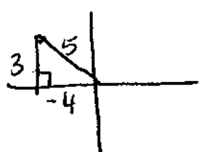
$\sin^2\theta = .51$

$\sin\theta = .71414$

$\tan\theta = \frac{.71417}{-.7} = \boxed{-1.02}$

3. If the terminal side of angle θ passes through the point $(-4, 3)$, what is the value of $\cos\theta$?

A. $\frac{3}{5}$ B. $-\frac{3}{5}$ C. $\frac{4}{5}$ **(D.)** $-\frac{4}{5}$



$\cos\theta = \frac{A}{H} = \frac{-4}{5}$

4. The expression $(\cot\theta)(\sec\theta)$ is equivalent to

$\frac{\cos\theta}{\sin\theta} \cdot \frac{1}{\cos\theta} = \frac{1}{\sin\theta}$

A. $\tan\theta$ B. $\cos\theta$

C. $\cot\theta$ **(D.)** $\csc\theta$

5. Express $\frac{3\pi}{4}$ radians in degrees then state two coterminal angles (a positive and a negative).

$\frac{3\pi}{4} \cdot \frac{180}{\pi} = 135^\circ$

495° and -225°

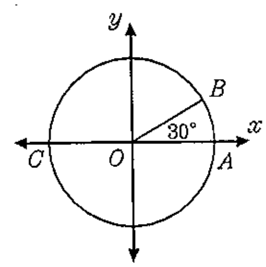
6. In the accompanying diagram of circle O, COA is a diameter, O is the origin, $\overline{OA} = 1$, and $m\angle BOA = 30$. What are the coordinates of B?

A. $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

(B.) $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

C. $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

D. $\left(\frac{\sqrt{2}}{2}, \frac{1}{2}\right)$



(x, y) — x: cos 30, y: sin 30

7. For all values of x for which the expressions are defined, $\sec x - \tan x$ is equivalent to

A. 1 B. $\cos x - \cot x$

(C.) $\frac{1 - \sin x}{\cos x}$ D. $\frac{\cos x - \sin^2 x}{\sin x \cos x}$

$\frac{1}{\cos x} - \frac{\sin x}{\cos x} = \frac{1 - \sin x}{\cos x}$

8. If $\cos\theta = -\frac{3}{4}$ and $\tan\theta$ is negative, the value of $\sin\theta$ is

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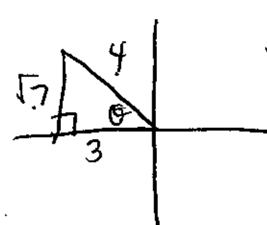
A. $\frac{4}{5}$ B. $-\frac{\sqrt{7}}{4}$

C. $\frac{7}{4}$ **(D.)** $\frac{\sqrt{7}}{4}$



$3^2 + x^2 = 4^2$

$x^2 = 7$

$x = \sqrt{7}$

9. What is the radian measure of an angle whose measure is $-420°$?

A. $-\frac{7\pi}{3}$ B. $-\frac{7\pi}{6}$

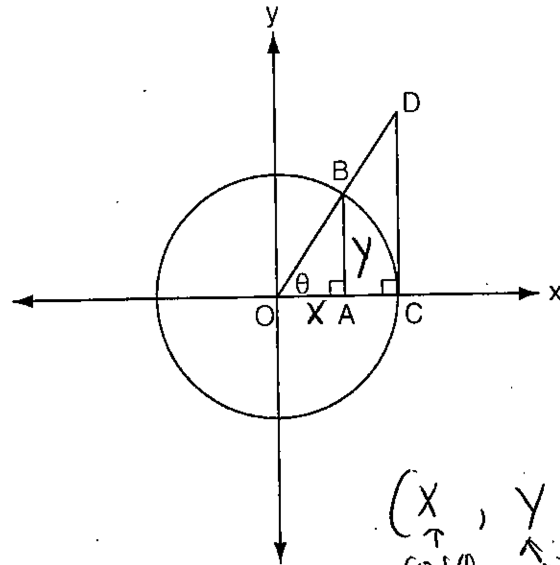
C. $\frac{7\pi}{6}$ D. $\frac{7\pi}{3}$

10. An angle, θ, is in standard position and its terminal side passes through the point $(2, -1)$. Find the *exact* value of $\sin\theta$. Rationalize all denominators.

11. If $\sin x = -\frac{2}{3}$ and $\sin x \cos x > 0$, in which quadrant does angle x lie?

A. I B. II C. III D. IV

12. The accompanying diagram shows unit circle O, with radius $OB = 1$.



Which line segment has a length equivalent to $\cos\theta$?

A. $\overline{AB}$ B. $\overline{CD}$ C. $\overline{OC}$ D. $\overline{OA}$

13. The expression $\frac{1-\sin^2 A}{2\cos A}$ is equivalent to

A. $\frac{\sin A}{2}$ B. $\frac{\cos A}{2}$

C. $\cos\frac{1}{2}A$ D. $2\cos A$

14. A circle centered at the origin has a radius of 10 units. The terminal side of an angle, θ, intercepts the circle in Quadrant II at point C. The y-coordinate of point C is 8. What is the value of $\cos\theta$?

A. $-\frac{3}{5}$ B. $-\frac{3}{4}$ C. $\frac{3}{5}$ D. $\frac{4}{5}$

15. If $\sin\theta < 0$ and $\cot\theta > 0$, in which quadrant does the terminal side of angle θ lie?

A. I B. II C. III D. IV

16. The expression $\dfrac{\sin x \bullet \cos x}{\tan x}$ is equivalent to

A. 1 B. $\sin^2 x$

C. $\cos x$ D. $\cos^2 x$

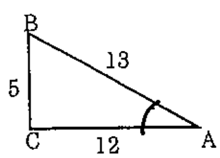
17. If $\sin\theta = \frac{2}{3}$ and θ is in Quadrant I, what is the value of $(\tan\theta)(\cos\theta)$?

A. $\frac{2}{3}$ B. $\frac{\sqrt{5}}{3}$ C. $\frac{3\sqrt{5}}{5}$ D. $\frac{2\sqrt{5}}{3}$

18. If $\sin^2(32°) + \cos^2(M) = 1$, then M equals

A. 32° B. 58° C. 68° D. 72°

19. In the accompanying diagram of $\triangle ABC$, which expression can be used to determine $m\angle A$?



A. $\sin A = \frac{12}{13}$

B. $\cos A = \frac{12}{5}$

C. $\cos A = \frac{5}{13}$

D. $\tan A = \frac{5}{12}$

20. If $\sin x = -\frac{2}{3}$ and $\tan x < 0$, in which quadrant does $\angle x$ terminate?

21. In standard position, an angle of $\frac{7\pi}{3}$ radians has the same terminal side as an angle of

A. 60° B. 120°

C. 240° D. −420°

22. For all values of x for which the expression is defined, $\sec x \cdot \csc x \cdot \cos x$ is equivalent to

A. $\tan x$ B. $\sin x$

C. $\dfrac{1}{\sin x}$ D. $\dfrac{1}{\cos x}$

23. If θ is an angle in standard position and its terminal side passes through point $(-\frac{1}{2}, \frac{\sqrt{3}}{2})$ on the unit circle, then a possible value of θ is

A. 60° B. 120°

C. 150° D. 330°

24. In right triangle ABC, if $m\angle C = 90$ and $\sin A = \frac{3}{5}$, $\cos B$ is equal to

A. $\frac{3}{5}$ B. $\frac{4}{5}$ C. $\frac{3}{4}$ D. $\frac{4}{3}$

25. The expression $\frac{\tan\theta}{\sec\theta}$ is equivalent to

A. $\sin\theta$ B. $\frac{\sin\theta}{\cos^2\theta}$

C. $\frac{\cos^2\theta}{\sin\theta}$ D. $\cos\theta$

$\frac{\frac{\sin\theta}{\cos\theta}}{\frac{1}{\cos\theta}} = \frac{\sin\theta}{\cos\theta}\cdot\frac{\cos\theta}{1}$

26. The terminal side of θ, an angle in standard position, intersects the unit circle at $P\left(-\frac{1}{3}, -\frac{\sqrt{8}}{3}\right)$. What is the value of sec θ?

$\frac{1}{\cos\theta}$

A. -3 B. $-\frac{3\sqrt{8}}{8}$

C. $-\frac{1}{3}$ D. $-\frac{\sqrt{8}}{3}$

$\cos\theta = -\frac{1}{3}$ so $\sec\theta = -\frac{3}{1}$

27. Express 105° in radian measure.

$105 \cdot \frac{\pi}{180} = \frac{7\pi}{12}$

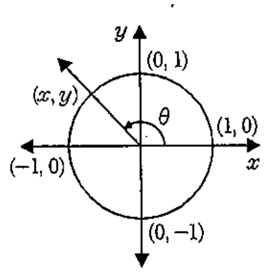
28. In the accompanying diagram of a unit circle, the ordered pair (x, y) represents the point where the terminal side of θ intersects the unit circle. If $m\angle\theta = 120$, what is the value of x in simplest form?

A. $-\frac{\sqrt{3}}{2}$

B. $\frac{\sqrt{3}}{2}$

C. $-\frac{1}{2}$

D. $\frac{1}{2}$



$\cos(120) = -\frac{1}{2}$

29. An angle, P, drawn in standard position, terminates in Quadrant II if

A. $\cos P < 0$ and $\csc P < 0$

B. $\sin P > 0$ and $\cot P > 0$

C. $\csc P > 0$ and $\cot P < 0$

D. $\tan P < 0$ and $\sec P > 0$

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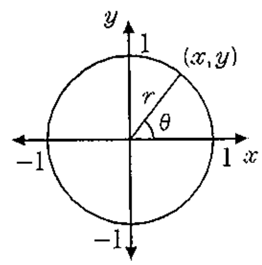
30. In the accompanying diagram of a unit circle, the ordered pair (x, y) represents the locus of points forming the circle. Which ordered pair is equivalent to (x, y)?

A. $(\sin\theta, \cos\theta)$

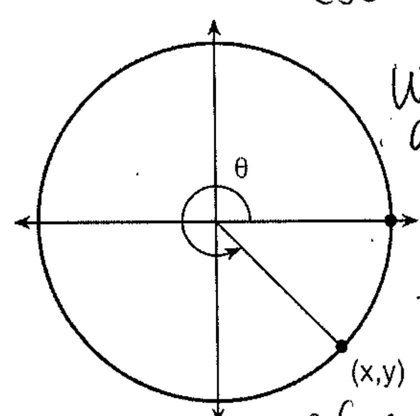
B. $(\cot\theta, \tan\theta)$

C. $(\tan\theta, \cot\theta)$

D. $(\cos\theta, \sin\theta)$



31. Using the unit circle below, explain why $\csc\theta = \frac{1}{y}$.



$\csc\theta = \frac{1}{\sin\theta}$

When an angle is in standard position, $\sin\theta$ = the y coordinate of a point on the unit circle. So since $\csc\theta = \frac{1}{\sin\theta}$, then it $= \frac{1}{y}$