Math 3 Name:_____

Unit 1.2 Trigonometric Functions PRACTICE

**Find the trigonometry function values of the most commonly used angles.** $0°$, $90°$, $180°$, $270°$, and $360°$

1)

| $\boldsymbol{\theta}$ | $\sin\boldsymbol{\theta}$ | $\cos\boldsymbol{\theta}$ | $\tan\boldsymbol{\theta}$ | $\csc\boldsymbol{\theta}$ | $\sec\boldsymbol{\theta}$ | $\cot\boldsymbol{\theta}$ |
|---|---|---|---|---|---|---|
| $\mathbf{0°}$ | | | | | | |
| $\mathbf{90°}$ | | | | | | |
| $\mathbf{180°}$ | | | | | | |
| $\mathbf{270°}$ | | | | | | |
| $\mathbf{360°}$ | | | | | | |

**Use the trigonometric function values from the above table to evaluate each expression.**
**An expression such as $\boldsymbol{cot^2\ 90°}$ means $\boldsymbol{(cot\ 90°)^2}$.**

2) $\cos 90° + 3\sin 270°$

3) $\tan 0° - 6\sin 90°$

4) $3\sec 180° - 5\tan 360°$

5) $4\csc 270° + 3\cos 180°$

6) $\tan 360° + 4\sin 180° + 5cos^2\ 180°$

7) $2\sec 0° + 4\,cot^2\ 90° + \cos 360°$

8) $sin^2\ 180° + cos^2\ 180°$

9) $sin^2\ 360° + cos^2\ 360°$

10) $sec^2\ 180° - 3\,sin^2\ 360° + 2\cos 180°$

11) $5\,sin^2\ 90° + 2\,cos^2\ 270° - 7\tan 360°$

12) **Concept check:** If $\cot\theta$ is undefined, then what is the value of $\tan\theta$?

13) **Concept check:** If the terminal side of an angle $\theta$ is in quadrant III, then what is the sign of each of the trigonometric function values of $\theta$?

**Suppose that the point (x, y) is in the indicated quadrant. Decide whether the given ratio is positive or negative.**

14) II, $\frac{x}{r}$

15) III, $\frac{y}{r}$

16) IV, $\frac{y}{x}$

17) IV, $\frac{x}{y}$

18) II, $\frac{y}{r}$

19) III, $\frac{x}{r}$

20) IV, $\frac{x}{r}$

21) IV, $\frac{y}{r}$

**Find the values of the six trigonometric functions for each angle in standard position having the given point on its terminal side. Rationalize denominators when applicable.**

22) $(-3, 4)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

23) $(-4, -3)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

24) $(0, 2)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

25) $(-4, 0)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

26) $(1, \sqrt{3})$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

27) $(-2\sqrt{3}, -2)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

28) $(-2, 0)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

29) $(3, -4)$

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

$\csc\theta =$

$\sec\theta =$

$\cot\theta =$

30) The angles $15°$ and $75°$ are complementary. With your calculator determine $\sin 15°$ and $\cos 75°$. Make a conjecture about the sines and cosines of complementary angles, and test your hypothesis with other pairs of complementary angles.

31) The angles $25°$ and $65°$ are complementary. With your calculator determine $\tan 25°$ and $\cot 65°$. Make a conjecture about the tangents and cotangents of complementary angles, and test your hypothesis with other pairs of complementary angles.

32) With your calculator determine $\sin 10°$ and $\sin(-10°)$. Make a conjuncture about the sines of an angle and its negative, and test your hypothesis with other angles. Also, use a geometry argument with the definition of $\sin\theta$ to justify your hypothesis.