

Trigonometry
Worksheet for Test #7

Review

- 1.) $\frac{\sin q}{\cos q}$ is equal to: a) $\cot \theta$ b) $\csc \theta$ c) $\tan \theta$
- 2.) $\frac{1}{\cos q}$ is equal to: a) $\csc \theta$ b) $\cot \theta$ c) $\tan \theta$
- 3.) $\frac{\cos q}{\sin q}$ is equal to: a) $\tan \theta$ b) $\sec \theta$ c) $\cot \theta$

Pythagorean Identities

- 4.) $(\cos q)^2 + (\sin q)^2 = 1$ is equivalent to:
- a.) $\cos^2 q^2 + \sin^2 q^2 = 1$
b.) $\cos q^2 + \sin q^2 = 1$
c.) $\cos^2 q + \sin^2 q = 1$
- 5.) Use the identity: $\cos^2 q + \sin^2 q = 1$ to solve this problem: If θ is in the quadrant III and $\cos \theta = -0.4$, what is $\sin \theta$?
- 6.) Use the identity: $\cos^2 q + \sin^2 q = 1$ to solve this problem: If θ is in the quadrant II and $\sin \theta = 0.7$, what is $\cos \theta$?
- 7.) Use the identity: $\cos^2 q + \sin^2 q = 1$ to solve this problem: If θ is in the quadrant IV and $\cos \theta = 0.3$, what is $\sin \theta$?
- 8.) Use the identity: $\cos^2 q + \sin^2 q = 1$ to solve this problem: If θ is in the quadrant I and $\sin \theta = 0.6$, what is $\tan \theta$?

9.) If you divide each term of the trig identity $\cos^2 q + \sin^2 q = 1$ by $\cos^2 q$, you will get:

$$\frac{\cos^2 q}{\cos^2 q} + \frac{\sin^2 q}{\cos^2 q} = \frac{1}{\cos^2 q}$$

Simplifying this statement gives you:

- a) $1 + \cot^2 q = \sec^2 q$
- b) $1 + \tan^2 q = \sec^2 q$
- c) $1 + \tan^2 q = \csc^2 q$

Use either $\cot^2 q + 1 = \csc^2 q$ or $\tan^2 q + 1 = \sec^2 q$ to answer the following questions.

10.) If θ is in the quadrant I and $\tan \theta = 2.747$, what is $\sec \theta$?

11.) If θ is in the quadrant II and $\csc \theta = -1.15$, what is $\cot \theta$?

12.) If θ is in the quadrant III and $\sec \theta = -1.305$, what is $\tan \theta$?

Sum and Difference Identities

Use the appropriate sum identity to solve each of the following problems.

13.) Compute $\sin 195^\circ$.

$$\begin{aligned} \sin (135^\circ + 65^\circ) &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

14.) Compute $\cos 75^\circ$.

$$\begin{aligned} \sin (30^\circ + 45^\circ) &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} - \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

15.) Compute $\sin \left(\frac{p}{4} + \frac{3p}{2} \right)$.

$$\begin{aligned} \sin \left(\frac{p}{4} + \frac{3p}{2} \right) &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

16.) Compute $\cos 105^\circ$ using the sum identity. Show all of your steps used to get the answer.

17.) Compute $\sin 150^\circ$.

$$\begin{aligned}\sin (180^\circ - 30^\circ) &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} - \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} - \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

Double Angle Identities

18.) If $\sin 18^\circ = 0.309$ and $\cos 18^\circ = 0.951$, use a double angle identity to compute **cos 36°** and **sin 36°**. Show your work.

19.) If $\sin 24^\circ = 0.407$ and $\cos 24^\circ = 0.914$, use a double angle identity to compute **cos 48°** and **sin 48°**. Show your work.

20.) If $\sin 35^\circ = 0.574$, use a double angle identity to compute **cos 70°**. Show your work.

21.) If $\sin 60^\circ = 0.866$, use a double angle identity to compute **cos 120°**. Show your work.

22.) If $\cos 50^\circ = 0.643$, use a double angle identity to compute **cos 100°**. Show your work.

Half Angle Identities

23.) Compute $\sin 15^\circ$ by using a half angle identity. Show your work.

24.) Compute $\cos 300^\circ$ by using a half angle identity. Show your work.