

Trig—INDIVIDUAL

All answers must be in exact, simplified form. Some answers may include square roots or π . NO CALCULATORS
Good luck!!!

1. If $\sin x = \frac{4}{7}$, and the angle is located in Quadrant I, find $\sec x$.

$$\begin{aligned} 4^2 + x^2 &= 7^2 \\ x^2 &= 49 - 16 \\ x^2 &= 33 \\ x &= \sqrt{33} \end{aligned}$$

2. If $\tan x = a$, what does $\tan(-x) = ?$

3. Solve over the interval $[0, 2\pi)$: $\cot \theta \cos \theta = \cos \theta$

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

4. Convert $\frac{7\pi}{18}$ to degrees.

$$\begin{aligned} \frac{\cos^2 \theta}{\sin \theta} &= \cos \theta \\ \cos^2 \theta &= \sin \theta \cos \theta \end{aligned}$$

5. Find the exact value of $\sin \frac{7\pi}{12}$.

$$1 - \cos \theta = \sin 2\theta$$

6. Simplify $42 \sin^2 x + 42 \cos^2 x$.

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7. If $\sec x = \frac{\sqrt{11}}{3}$ (in the Quadrant IV), find $\tan x$.

$$\sin\left(\frac{4\pi}{12} + \frac{3\pi}{12}\right)$$

$$\frac{7\pi}{18} = \frac{10\pi}{18} = \frac{\pi}{9}$$

8. Find $\tan\left(\sin^{-1} \frac{5}{13}\right)$.

$$\begin{aligned} &\sin \frac{9\pi}{12} \cos \frac{3\pi}{12} + \cos \frac{9\pi}{12} \sin \frac{3\pi}{12} \\ &\left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(\frac{1}{2}\right)\left(\frac{-\sqrt{2}}{2}\right) \end{aligned}$$

$$\frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{4}$$

$$\frac{\sqrt{6} + \sqrt{2}}{4}$$

9. Find the area of a triangle with sides of length 5 and 7 and an included angle measuring 45° .

10. Find the exact length of the arc in a circle with radius 15 cm and a central angle measuring 140° .

11. How many triangles ΔABC exist such that $a = 5$, $b = 6$, and $\angle A = 95^\circ$.

12. Solve over the interval $[0, 2\pi)$: $2 \cos^2 x - \cos x - 1 = 0$.

13. Find the value of the phase shift in $f(x) = -5 \sin(3x - 7\pi)$.

14. Convert 625° to radians.

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15. Find the exact value of $\sin^{-1}\left(\sin\left(\frac{5\pi}{6}\right)\right)$.

16. Solve over the interval $[0, 2\pi)$: $\tan^3 x - \tan^2 x = 0$.

17. Find secant of an angle in standard position with terminal ray passing through point $(-3, -6)$.

18. Determine the quadrant in which the terminal side of θ lies if $\sin \theta > 0$ and $\sec \theta < 0$.

19. Given $\csc x = \frac{13}{5}$, find $\sec x \cdot \tan x$.

20. Find all values for θ in the interval $[0, 2\pi)$ for the equation $4 \sin^2 \theta = 1$.