

Trigonometric Functions

EXAMINATION NUMBER

00769700

Clearly number your answers and save them in a Word file.
Upload your file as instructed in the Lesson 2 Review.

Go to <http://www.takeexamsonline.com> to submit your answers online. Click on Take Exam next to Lesson 4. Then click on Submit Files.

Questions 1–20: Answer the following questions.

1. Find the *complete exact* solution of $\sin x = -\frac{\sqrt{3}}{2}$.
2. Solve $\cos 2x - 3\sin x \cos 2x = 0$ for the principal value(s) to two decimal places.
3. Solve $\tan^2 x + \tan x - 1 = 0$ for the principal value(s) to two decimal places.

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4. Prove that $\tan^2 \alpha - 1 + \cos^2 \alpha = \tan^2 \alpha \sin^2 \alpha$.

5. Prove that $\tan \beta \sin \beta + \cos \beta = \sec \beta$.

6. Prove that $\frac{\tan \lambda \cos^2 \lambda + \sin^2 \lambda}{\sin \lambda} = \cos \lambda + \sin \lambda$.

7. Prove that $\frac{1 + \tan \theta}{1 - \tan \theta} = \frac{\sec^2 \theta + 2 \tan \theta}{1 - \tan^2 \theta}$.

8. Prove that $\frac{\sin^2 \omega - \cos^2 \omega}{\tan \omega \sin \omega + \cos \omega \tan \omega} = \cos \omega - \cot \omega \cos \omega$.

9. Find a counterexample to show that the equation $\sec \alpha - \cos \alpha = \sin \alpha \sec \alpha$ is *not* an identity.

10. Write $\tan\left(\frac{\pi}{4} - \beta\right)$ as a function of β only.

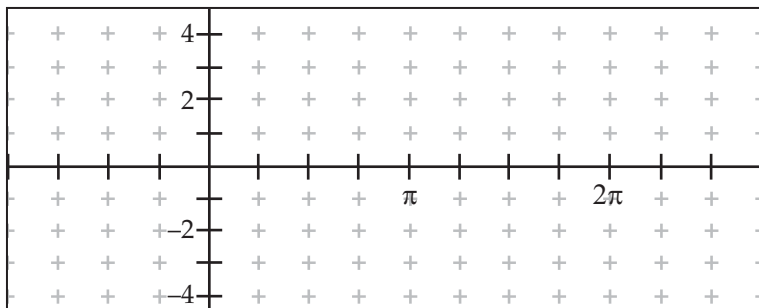
11. Write $\cos\left(\lambda + \frac{\pi}{3}\right)$ as a function of λ only.

12. Write $\cos(-83^\circ)$ as a function of a positive angle.

13. Write $\sin(125^\circ)$ in terms of its cofunction. Make sure your answer is a function of a positive angle.

14. Find the *exact* value of $\sin(195^\circ)$.

15. Sketch a graph of $y = \sin(-2x)$, paying particular attention to the critical points.



16. If $\cot 2\theta = \frac{5}{12}$ with $0 \leq 2\theta \leq \pi$, find $\cos\theta$, $\sin\theta$, and $\tan\theta$.

17. Find the exact value of $\sin 2\alpha$ if $\cos\alpha = \frac{4}{5}$ (α in Quadrant I).

18. Find the exact value of $\tan 2\beta$ if $\sin\beta = \frac{5}{13}$ (β in Quadrant II).

19. Solve $\sin 2x + \sin x = 0$ for $0 \leq x \leq 2\pi$.

20. Write $2\sin 37^\circ \sin 26^\circ$ as a sum (or difference).