

For Problem 1-6, use:

$(-4, -3)$ is on the terminal side of C and
 $180^\circ \leq C \leq 270^\circ$

$\sec E = 17/8$ and $0^\circ \leq E \leq 90^\circ$; and

$\cot Q = 12/5$ and $-180^\circ \leq Q \leq -90^\circ$

to find the exact values of:

1. $\sin(C-E)$

4. $\csc(C+E)$

2. $\cos 2C$

5. $\tan 2E$

3. $\sec 2Q$

6. $\cot(E+Q)$

7. Prove: $\frac{2\sin^2 w - 5\cos w + 1}{6\sin^2 w - 5\cos w - 2} = \frac{\cos w + 3}{3\cos w + 4}$

9. Solve exactly for A: $\cos^4 A - \sin^4 A = 1$

8. Prove:
 $\sin(A + B)\sin(A - B) = \sin^2 A - \sin^2 B$

10. Solve exactly for $x \in [0, \pi)$:

$$\frac{\tan x + \cot x}{\cot x - \tan x} = 2$$

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to find the exact values of:

1. $\cos (C-E)$

4. $\tan (C+E)$

2. $\sin 2E$

5. $\cot 2C$

3. $\sec (Q+E)$

6. $\csc 2C$

7.

$$\frac{\cos(A+2B)\cos(B)+\sin(A+2B)\sin(B)}{\sin A\cos B+\cos A\sin B} = \frac{1-\tan A\tan B}{\tan A+\tan B}$$

8. Solve for x :

$$\sec\left(x-\frac{\pi}{4}\right) = 2 + 2\sec\left(x-\frac{\pi}{4}\right)$$

9. Prove: $\tan x \sin 2x - 2 \cos^2 x = -2 \cos 2x$

10. Solve for $A \in (-2\pi, 2\pi)$:

$$\left(\sin\frac{1}{2}A - \cos\frac{1}{2}A\right)^2 = \frac{1}{2}$$

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to find the exact values of:

1. $\tan(Q-E)$

4. $\sec(Q+C)$

2. $\cot 2Q$

5. $\csc 2E$

3. $\cos(C+Q)$

6. $\sin 2C$

7. Prove: $\frac{\cos^4 \phi - \sin^4 \phi}{\sin \phi \cos \phi} = \frac{1 - \tan^2 \phi}{\tan \phi}$

9. Solve exactly for $x \in [0, \pi)$:
 $\tan 3x - \tan x + \tan 3x \tan x = -1$

8. Prove: $2 \cot f = \cot \frac{f}{2} - \tan \frac{f}{2}$

10. Solve exactly for x : $\frac{1 - \tan x \tan \frac{\pi}{12}}{\tan x + \tan \frac{\pi}{12}} = \sqrt{3}$

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to find the exact values of:

1. $\text{Csc}(E-C)$

4. $\text{Sin}(E+Q)$

2. $\text{Sin } 2E$

5. $\text{Cos } 2Q$

3. $\text{Cot } 2Q$

6. $\text{Tan}(Q-E)$

7. Prove: $\sin^2 \theta \tan \frac{\theta}{2} = \sin \theta - \sin \theta \cos \theta$

9. Prove: $\frac{\sec \theta}{\cot \theta + \tan \theta} = \sin \theta$

8. Solve for $x \in [-2\pi, 2\pi]$:
 $3 - 3\sin x - 2\cos^2 x = 0$

10. Solve for x :
 $(\cos^2 x - \sin^2 x)^2 - (2\sin x \cos x)^2 = \frac{1}{2}$