

(1) Verify:

(a) $\frac{1}{1 - \sin^2 y} = 1 + \tan^2(y)$

(b) $(1 - \cos^2 x)(1 + \cot^2 x) = 1$

(c) $\frac{\sin(x) + \cos(x)}{\sec(x) + \csc(x)} = \sin(x) \cos(x)$

(2) Rewrite:

(a) $\cos^4 x$ as powers of sine.

(b) $\cos^4 x$ as first powers of cosine.

(c) $\sin 2x - \cos 2x$ in terms of sine.

(3) Find the exact value of:

(a) $\sin\left(-\frac{7\pi}{12}\right)$.

(b) $\cos\left(\frac{13\pi}{15}\right) \cos\left(-\frac{\pi}{5}\right) - \sin\left(\frac{13\pi}{15}\right) \sin\left(-\frac{\pi}{5}\right)$.

(4) Verify:

(a) $\sin(x + y) - \sin(x - y) = 2 \cos x \sin y$.

(b) $\cos(x + y) + \cos(x - y) = 2 \cos x \cos y$.

(5) Write in terms of sine only:

(a) $-\sqrt{3} \sin x + \cos x$.

(b) $\sin 2x - \cos 2x$.

(6) Solve:

(a) $\sin x = -\frac{1}{2}$

(d) $\cos x - 6 \sin^2 x = -5$

(b) $\cos x = -0.234$

(e) $\sin x + \cos x = 1$

(c) $\sin x - 6 \sin^2 x = -2$

(f) $\sin 2x + \cos 3x = 1$

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