Find the exact value of $\sin(11\pi/12)$.

Find the exact value of $\cos(\pi/12)$.

Find the exact value of $\dfrac{\tan(160°) - \tan(40°)}{1 + \tan(160°)\tan(40°)}$.

Find the exact value of $\cos(\alpha+\beta)$ if $\sin(\alpha) = 20/29$, $0<\alpha<\pi/2$ and $\cos(\beta) = 4/5$, $0<\beta<\pi/2$.

If $\tan(\theta/2) = u$, write $\sin(\theta)$ and $\cos(\theta)$ in terms of u.

An important result in analytic geometry concerns simplifying general second-degree equations of the form $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$ by means of a procedure known as rotation of axes. This is done by finding the angle θ where $\cot(2\theta) = (A- C)/B$ for $-\pi/2 < \theta < \pi/2$. Determine the exact value of θ for $5x^2 + 3\sqrt{3} \cdot xy + 2y^2 - 8 = 0$.

Find all solutions to the equation $2\sin^2(x) = \sin(x)$.

Find all solutions to the equation $\cos(2x) = \sqrt{2} - \cos(2x)$.

A weight suspended from a spring is vibrating vertically according to the equation $f(t) = 10\sin(.75\pi t - .25)$, where f(t) centimeters is the distance of the weight from its rest position with up being the positive direction. Find all the positive values of t for which the displacement of the weight above its rest position is 5 cm.

A consumer notes the sinusoidal nature of her monthly power bills. In winter when she uses electricity to heat her home and in the summer when she cools her home, the bills are high. In spring and fall, significantly less electricity is used and the bills are much smaller. The function $C(t) = 60 + 40\cos(\pi t/3 - p/3)$ models this behavior, where C is the cost of power in dollars for he month t, $1 \leq t \leq 12$, with t = 1 corresponding to January. For what months is the cost exactly $80?

Find the exact value. Write the answer as a single fraction.

$\sin(11\pi/12)$ $\cos(75^{o})$

Express as a trigonometric function of one angle.

$\sin(57^{o})\cos(4^{o})+\cos(57^{o})\sin(4^{o})$

If α and β are second-quadrant angles such the $\sin(\alpha) = 2/3$ and $\cos(\beta) = -1/3$, find the exact value of $\sin(\alpha+\beta)$ and write the answer as one fraction.

Use an addition or subtraction formula to find the exact solutions between 0 and $\pi/2$

$\sin(3t)\cos(t) + \cos(3t)\sin(t) = -1/2$

Write the expression as a cosine function. Find the amplitude, period, and phase shift.

$5\cos(10x) - 5\sin(10x)$

Find the given angle in radians and degrees if,

$\sin(\alpha) = 2/3$, $-90^{o} < \alpha < 90^{o}$ $\csc(\alpha) = -4$, $-90^{o} < \alpha < 90^{o}$

$\sec(\alpha) = 5$, $0^{o} < \alpha < 180^{o}$ $\tan(\alpha) = -14$, $-90^{o} < \alpha < 90^{o}$

$\cot(\alpha) = 2$, $0^{o} < \alpha < 180^{o}$

Give all exact solutions.

$2\sin^2(x) = \sin(x)$

$\sec^2(x) + \tan^2(x) = 1$

$\cos(x) - \sin(x) = 1$

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

$2\sin(x)\tan(x) + \quad 3\tan(x) = 0$

$2\cos^2(x) + 7\sin(x) = 5$

$3\sin^2(x) + \sin(x) = 0$

$\sin(x) - \csc(x) + 1 = 0$