60. $\cos 2x = \cos^{-1}(-1)$ ← Evaluate

$2x = \pi$

$x = \frac{\pi}{2}$

$x = \frac{\pi}{2} + 2\pi n$, where $n \in \mathbb{Z}$

61. $\sin 2x + \sin x = 0$

$2\sin x \cos x + \sin x = 0$

$\sin x (2\cos x + 1) = 0$

$\sin x = 0$ $\quad 2\cos x + 1 = 0$

$x = 0, \pi$ $\quad \cos x = -\frac{1}{2}$

$x = \frac{2\pi}{3}, \frac{4\pi}{3}$

$x = \pi n$ where $n \in \mathbb{Z}$

$x = \frac{2\pi}{3} + 2n\pi$

$x = \frac{4\pi}{3} + 2\pi n$

62. $\cos 2x - \cos x = 0$

$2\cos^2\theta - 1 - \cos x = 0$

$2\cos^2\theta - \cos x - 1 = 0$

$2x^2 - x - 1 = 0$

$m: -2$

$A: -1$

$(-2, 1)$

$2x^2 - 2x + x - 1 = 0$

$2x(x-1) + 1(x-1) = 0$

$(2x+1)(x-1) = 0$

$(2\cos x + 1)(\cos - 1) = 0$

$2\cos x + 1 = 0$ $\quad \cos x - 1 = 0$

$\cos x = -\frac{1}{2}$ $\quad \cos x = 1$

$x = \frac{2\pi}{3}, \frac{4\pi}{3}$ $\quad x = 0$

$x = \frac{2\pi}{3} + 2\pi n$, where $n \in \mathbb{Z}$

$x = \frac{4\pi}{3} + \frac{2\pi}{n}$, where $n \in \mathbb{Z}$

$x = 2\pi n$

63. $\cos\frac{x}{2} - \sin x = 0$

$$\left(\pm\sqrt{\frac{1+\cos A}{2}}\right)^2 = (+\sin x)^2$$

$$\frac{1+\cos A}{2} = \sin^2 x$$

$$\frac{1+\cos A}{2} = 1-\cos^2 x$$

$$\frac{1}{2} + \frac{1}{2}\cos A = 1 - \cos^2 x$$

$$-1 \quad -1 + \cos^2 x$$

$$\cos^2 x + \frac{1}{2}\cos A - \frac{1}{2} = 0$$

$$2\cos^2 x + \cos A - 1 = 0$$

$M = -2$

$A = 1$

$(2,-1)$

$$2\cos^2 x + 2\cos x - \cos x - 1 = 0$$

$$2\cos x(\cos x + 1) - 1(\cos x + 1) = 0$$

$2\cos x - 1 = 0$ $\qquad$ $\cos x + 1 = 0$

$\cos x = \frac{1}{2}$ $\qquad$ $\cos x = -1$

$x = \frac{\pi}{3}, \frac{5\pi}{3}$ $\qquad$ $x = \pi$

$x = \frac{\pi}{3} + 2\pi n$, where $n \in \mathbb{Z}$

$x = \frac{5\pi}{3} + 2\pi n$, where $n \in \mathbb{Z}$

$x = \pi + 2\pi n$, where $n \in \mathbb{Z}$

64. $\sqrt{\frac{1-\cos A}{2}} + \cos x = 0$

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

$\frac{1-\cos A}{2} = \cos^2 x$

$0 = \cos^2 x + \frac{1}{2}\cos x - \frac{1}{2}$

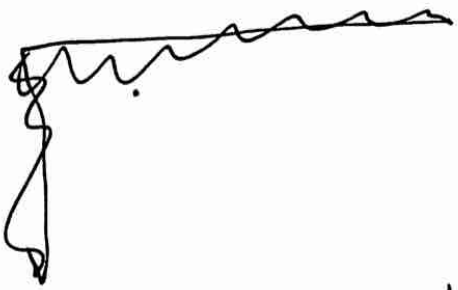
$0 = 2\cos^2 x + \cos x - 1$

M: -2

A: 1

$0 = 2\cos^2 x + 2\cos x - \cos x - 1$

See problem 63 For rest of work

65. 

$\cos 2x = 3\sin x + 2$

$1 - 2\sin^2 x = 3\sin x + 2$

$0 = 2\sin^2 x + 3\sin x + 1$

M: 2

A: 3

$0 = 2\sin^2 x + 2\sin x + \sin x + 1$

$0 = 2\sin x(\sin x + 1) + 1(\sin x + 1)$

$2\sin x + 1 = 0$

$\sin x = -\frac{1}{2}$

$x = \frac{11\pi}{6}, \frac{7\pi}{6}$

$\sin x + 1 = 0$

$\sin x = -1$

$x = \frac{3\pi}{2}$

$x = \frac{11\pi}{6} + 2\pi n$, where $n \in$

$x = \frac{7\pi}{6} + 2\pi n$

$x = \frac{3\pi}{2} + 2\pi n$