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

$\cos x + 1 = 1/2$

$\cos x = -1/2$

$x_1 = 2\pi/3$

$x_2 = 4\pi/3$

2) $4\tan x + 2 = 2\tan x$

$2\tan x = -2$

$\tan x = -1$

$x_1 = 3\pi/4$

$x_2 = 7\pi/4$

3) $2\cos x + 3 = 0$

$2\cos x = -3$

$\cos x = -3/2$

$x =$ no sol'n

$(-1 \le \cos x \le 1)$

4) $3(\cos x - 1) = 3 - 4\cos x$

$3\cos x - 3 = 3 - 4\cos x$

$+4\cos x \quad +3$

$7\cos x = 6$

$\cos x = 6/7$

$x = \cos^{-1}(6/7)$

$x_1 = 31°$

$x_2 = (360 - 31) = 329°$

5) $4\sin^2 x - 1 = 0$

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

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

$\sin x = -1/2 \qquad \sin x = 1/2$

$x = \pi/6, 5\pi/6, 7\pi/6, 11\pi/6$

6) $5\sin^2 x - 4\sin x - 1 = 0$

$(5\sin x + 1)(\sin x - 1) = 0$

$5\sin x + 1 = 0 \qquad \sin x = 1$

$\sin x = -1/5 \qquad x = 90°$

$x = -11.53°$

$x_1 = 180 + 11.54 = 191.54°$

$x_2 = 360 - 11.54 = 348.46°$

$x_3 = 90°$

7) $2\cos^2\theta - 4\cos\theta - 5 = 0$

$\cos\theta = \dfrac{4 \pm \sqrt{16 - 4(2)(-5)}}{2(2)}$

$\cos\theta = \dfrac{4 \pm \sqrt{56}}{4} = \dfrac{4 \pm 2\sqrt{14}}{4} = 1 \pm \frac{1}{2}\sqrt{14}$

$\cos\theta = 2.87, -0.87$

DQ

$\theta = \cos^{-1}(-0.87)$

$\theta_1 = 150.46°$

$\theta_2 = 360 - 150.46° = 209.54°$

8) $4\cos x + 3 = \dfrac{2}{\cos x}$

$4\cos^2 x + 3\cos x = 2$

$4\cos^2 x + 3\cos x - 2 = 0$

$\cos x = \dfrac{-3 \pm \sqrt{9 - 4(4)(-2)}}{2(4)}$

$\cos x = \dfrac{-3 \pm \sqrt{41}}{8}$

$\cos x_1 = 0.42539$

$\cos x_2 = -1.175$ } D.Q

$x_1 = 64.82°$

$x_2 = 295.18°$

4, 7010

9) $3\cos 2\theta = 2 - \sin\theta$

$3(1-2\sin^2\theta) = 2-\sin\theta$

$3 - 6\sin^2\theta = 2 - \sin\theta$

$0 = 6\sin^2\theta - \sin\theta - 1$

$0 = (3\sin\theta + 1)(2\sin\theta - 1)$

$3\sin\theta + 1 = 0$ | $2\sin\theta - 1 = 0$

$\sin\theta = -1/3$ | $\sin\theta = 1/2$

$\theta = -19.4712$ | $\theta = 30^\circ, 150^\circ$

$\theta = 199.47^\circ, 340.53^\circ$

10) $2\cot x - \frac{4}{\cot x} = 7$

$2\cot^2 x - 4 = 7\cot x$

$2\cot^2 x - 7\cot x - 4 = 0$

$(2\cot x + 1)(\cot x - 4) = 0$

$2\cot x + 1 = 0$ | $\cot x - 4 = 0$

$\cot x = -1/2$ | $\cot x = 4$

$x = -63.43^\circ$ | $\tan x = \frac{1}{4}$

Degrees: $x_1 = 296.57$ $x_1 = 14.04$

$x_2 = 116.57$ $x_2 = 194.04$

tan

$x = -1.107$ $x = 0.245$

Radians: $x_1 = 5.176$ $x_1 = 0.245$

$x_2 = 2.035$ $x_2 = 3.387$

$\frac{13\pi}{20}, \frac{33\pi}{20}$ $\frac{7\pi}{90}, \frac{97\pi}{90}$