Honors PreCalculus   Name_____

Solving Trig Equations - Mixed Practice   Date_____ Period_____

Solve each equation for $0 \le \theta < 360$.

1) $\dfrac{-4 + \sqrt{3}}{2} = -2 + \sin \theta$

$\{60, 120\}$

2) $4 + \cos \theta = 4$

$\{90, 270\}$

3) $3\sqrt{3} = -6\cos 3\theta$

$\{50, 70, 170, 190, 290, 310\}$

4) $\dfrac{2}{5} \cdot \sin 3\theta = \dfrac{\sqrt{3}}{5}$

$\{20, 40, 140, 160, 260, 280\}$

Solve each equation for $0 \le \theta < 2\pi$.

5) $3\sqrt{2} = -6\cos \theta$

$$\left\{ \frac{3\pi}{4}, \frac{5\pi}{4} \right\}$$

6) $-1 + \sin \theta = \frac{-2 + \sqrt{3}}{2}$

$$\left\{ \frac{\pi}{3}, \frac{2\pi}{3} \right\}$$

7) $-\frac{7}{2} = -4 + \sin 4\theta$

$$\left\{ \frac{\pi}{24}, \frac{5\pi}{24}, \frac{13\pi}{24}, \frac{17\pi}{24}, \frac{25\pi}{24}, \frac{29\pi}{24}, \frac{37\pi}{24}, \frac{41\pi}{24} \right\}$$

8) $\frac{2 + \sqrt{3}}{2} = 1 + \cos 3\theta$

$$\left\{ \frac{\pi}{18}, \frac{11\pi}{18}, \frac{13\pi}{18}, \frac{23\pi}{18}, \frac{25\pi}{18}, \frac{35\pi}{18} \right\}$$

Find ALL solutions to each equation in degrees.

9) $\dfrac{-10 - \sqrt{2}}{2} = -5 + \sin \theta$

225 + 360*n*, −45 + 360*n*
OR
225 + 360*n*, 315 + 360*n*

10) $-2\sqrt{2} = -4\cos \theta$

{315 + 360*n*, 45 + 360*n*}

11) $-1 = 2\sin(\theta + 330)$

{360*n*, −120 + 360*n*}

12) $5 + \cos(\theta + 135) = \dfrac{9}{2}$

{−15 + 360*n*, 105 + 360*n*}

Find ALL solutions to each equation in radians.

13) $2\sqrt{2} = -4\sin\theta$

$$-\frac{\pi}{4} + 2\pi n, \frac{7\pi}{4} + 2\pi n$$
OR
$$\frac{5\pi}{4} + 2\pi n, \frac{7\pi}{4} + 2\pi n$$

14) $\dfrac{-6 + \sqrt{3}}{2} = -3 + \cos\theta$

$$\left\{\frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n\right\}$$

15) $-4 + \sin 2\theta = \dfrac{-8 - \sqrt{2}}{2}$

$$-\frac{\pi}{8} + \pi n, \frac{7\pi}{8} + \pi n$$
OR
$$\frac{5\pi}{8} + \pi n, \frac{7\pi}{8} + \pi n$$

16) $\dfrac{2}{3} \cdot \cos\dfrac{\theta}{4} = -\dfrac{\sqrt{3}}{3}$

$$\left\{\frac{10\pi}{3} + 8\pi n, \frac{14\pi}{3} + 8\pi n\right\}$$