

Name: _____

Trig Equation Practice

Solve each equation on $0 \leq \theta \leq 2\pi$. Give exact answers in terms of π except on #20.

1.) $2\sin\theta + 3 = 2$

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

2.) $2\sin^2\theta - 1 = 0$

$$\theta = \frac{\pi}{4}, \frac{7\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}$$

3.) $4\cos^2\theta - 3 = 0$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$$

4.) $\tan\theta + 1 = 0$

$$\theta = \frac{3\pi}{4}, \frac{7\pi}{4}$$

5.) $\sqrt{3}\cot\theta + 1 = 0$

$$\theta = \frac{2\pi}{3}, \frac{5\pi}{6}$$

6.) $4\sec\theta + 6 = -2$

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

7.) $2\cos^2\theta + \cos\theta = 0$

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

8.) $2\sin^2\theta - \sin\theta - 1 = 0$

$$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{2}$$

9.) $(\tan\theta - 1)(\sec\theta - 1) = 0$ hint: set each factor = 0 and solve

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}, 0$$

10.) $1 - \cos^2\theta = 1 + \cos\theta + \cos^2\theta$

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

11.) $1 - \sin^2 \theta + \sin \theta = \sin^2 \theta$

$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{2}$

12.) $1 - \cos^2 \theta = 6(\cos \theta + 1)$

$\theta = \pi$

13.) $2(1 - \cos^2 \theta) = 3(1 - \cos \theta)$

$\frac{\pi}{3}, \frac{5\pi}{3}, 0$

14.) $\sin \theta = \frac{1}{\sin \theta}$

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

15.) $\sec^2 \theta - 1 = \frac{3}{2} \sec \theta$

$\frac{\pi}{3}, \frac{5\pi}{3}$

16.) $\cos^3 \theta = \cos \theta$

$0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$

17.) $\frac{1 + \cos \theta}{1 - \cos \theta} = 0$

π

18.) $8 - 12(1 - \cos^2 \theta) = 4 \cos^2 \theta$

$\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

19.) $4(1 - \cos^2 \theta) = 1 + 4 \cos \theta$

$\frac{\pi}{3}, \frac{5\pi}{3}$

20.) $4 \sin^2 \theta + 7 \sin \theta = 2$ (round to nearest tenth)

$0.3, 2.9$

21.) $4 \sin^3 \theta + 2 \sin^2 \theta - 2 \sin \theta - 1 = 0$

$\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}, \frac{7\pi}{6}, \frac{11\pi}{6}$

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25) 0.41, 2.73

27) 1.37, 4.51

29) 2.69, 3.59

31.) 1.82, 4.46