

Preview to Lesson 7-5; Solving Trigonometric Equations

Date _____

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

1) $\tan \theta = \sqrt{3}$

2) $\frac{\sqrt{2}}{2} = \sin \theta$

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

4) $\frac{\sqrt{2}}{2} = \cos \theta$

5) $\frac{1}{2} = \sin \theta$

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

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

7) $-1 = \tan \theta$

8) $\cos \theta = -\frac{1}{2}$

9) $\frac{\sqrt{3}}{3} = \tan \theta$

10) $1 = \tan \theta$

11) $\tan \theta = -\frac{\sqrt{3}}{3}$

12) $\frac{\sqrt{2}}{2} = \sin \theta$

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

13) $-8 = 4\sin \theta$

14) $-2 + \tan \theta = \frac{-6 + \sqrt{3}}{3}$

15) $-\frac{\sqrt{2}}{4} = \frac{1}{2} \cdot \sin \theta$

16) $1 + \cos \theta = 2$

17) $-4 = -5 + \cos \theta$

18) $-3 + \sin \theta = -\frac{5}{2}$

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

19) $3\tan \theta = -3\sqrt{3}$

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

21) $\frac{1}{2} \cdot \cos \theta = -\frac{1}{4}$

22) $2\sqrt{3} = 2\cos \theta$

23) $\frac{2}{3} \cdot \sin \theta = -\frac{1}{3}$

24) $4\tan \theta = 4\sqrt{3}$

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

$$25) \sin(\theta + 30) = -\frac{\sqrt{2}}{2}$$

$$26) 2 = \cos(\theta + 60)$$

$$27) \cos \frac{\theta}{2} = \frac{1}{2}$$

$$28) \frac{1}{2} = \cos(\theta + 225)$$

$$29) \cos -\theta = -\frac{1}{2}$$

$$30) -\frac{\sqrt{2}}{2} = \cos(\theta + 30)$$

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

$$31) \sin\left(\theta + \frac{\pi}{4}\right) = -1$$

$$32) \tan \frac{\theta}{2} = 0$$

$$33) 1 = \tan\left(\theta + \frac{\pi}{6}\right)$$

$$34) -\frac{1}{2} = \sin(\theta + \pi)$$

$$35) -\frac{1}{2} = \sin\left(\theta + \frac{2\pi}{3}\right)$$

$$36) -\sqrt{3} = \tan\left(\theta + \frac{11\pi}{6}\right)$$

Answers to Preview to Lesson 7-5; Solving Trigonometric Equations

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|---|--|--|--|
| 1) $\{60, 240\}$ | 2) $\{45, 135\}$ | 3) $\{240, 300\}$ | 4) $\{45, 315\}$ |
| 5) $\{30, 150\}$ | 6) $\{135, 225\}$ | 7) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ | 8) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$ |
| 9) $\left\{\frac{\pi}{6}, \frac{7\pi}{6}\right\}$ | 10) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$ | 11) $\left\{\frac{5\pi}{6}, \frac{11\pi}{6}\right\}$ | 12) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}\right\}$ |
| 13) No solution. | 14) $\{30, 210\}$ | 15) $\{225, 315\}$ | 16) $\{0\}$ |
| 17) $\{0\}$ | 18) $\{30, 150\}$ | 19) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$ | 20) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}\right\}$ |
| 21) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$ | 22) No solution. | 23) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$ | 24) $\left\{\frac{\pi}{3}, \frac{4\pi}{3}\right\}$ |
| 25) $\{195, 285\}$ | 26) No solution. | 27) $\{120\}$ | 28) $\{75, 195\}$ |
| 29) $\{120, 240\}$ | 30) $\{105, 195\}$ | 31) $\left\{\frac{5\pi}{4}\right\}$ | 32) $\{0\}$ |
| 33) $\left\{\frac{\pi}{12}, \frac{13\pi}{12}\right\}$ | 34) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$ | 35) $\left\{\frac{\pi}{2}, \frac{7\pi}{6}\right\}$ | 36) $\left\{\frac{5\pi}{6}, \frac{11\pi}{6}\right\}$ |