Pre-Calculus   Name_____

Solving Trig Equations   Date_____

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

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

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

3) $-\dfrac{1}{5} \cdot \cot \theta = \dfrac{1}{5}$

4) $\tan \theta = -1$

5) $3 - \dfrac{1}{4} \cdot \cot \theta = \dfrac{13}{4}$

6) $-3 + 4\tan \theta = -7$

7) $-\dfrac{2\sqrt{3}}{3} = \csc \theta$

8) $\csc \theta = \sqrt{2}$

9) $4 + \tan \theta = 3$

10) $4\tan \theta = -4\sqrt{3}$

11) $5 + 2\sin\left(\theta + \dfrac{3\pi}{4}\right) = 5$

12) $-5 - \dfrac{2}{3} \cdot \sin -2\theta = \dfrac{-15 - \sqrt{2}}{3}$

13) $8\sin 4\theta = -4\sqrt{3}$

14) $4\sqrt{3} = -6\sec\left(\theta + \dfrac{\pi}{2}\right)$

15) $5 + \sec 4\theta = \dfrac{15 - 2\sqrt{3}}{3}$

16) $-4\tan \dfrac{\theta}{2} = 4$

17) $\sqrt{3} = 3\tan 2\theta$

18) $-2\sqrt{3} = 3\csc\left(\theta + \dfrac{\pi}{2}\right)$

Answers to Solving Trig Equations

1) $\left\{\dfrac{5\pi}{6}, \dfrac{11\pi}{6}\right\}$

2) $\left\{\dfrac{2\pi}{3}, \dfrac{5\pi}{3}\right\}$

3) $\left\{\dfrac{3\pi}{4}, \dfrac{7\pi}{4}\right\}$

4) $\left\{\dfrac{3\pi}{4}, \dfrac{7\pi}{4}\right\}$

5) $\left\{\dfrac{3\pi}{4}, \dfrac{7\pi}{4}\right\}$

6) $\left\{\dfrac{3\pi}{4}, \dfrac{7\pi}{4}\right\}$

7) $\left\{\dfrac{4\pi}{3}, \dfrac{5\pi}{3}\right\}$

8) $\left\{\dfrac{\pi}{4}, \dfrac{3\pi}{4}\right\}$

9) $\left\{\dfrac{3\pi}{4}, \dfrac{7\pi}{4}\right\}$

10) $\left\{\dfrac{2\pi}{3}, \dfrac{5\pi}{3}\right\}$

11) $\left\{\dfrac{\pi}{4}, \dfrac{5\pi}{4}\right\}$

12) $\left\{\dfrac{5\pi}{8}, \dfrac{7\pi}{8}, \dfrac{13\pi}{8}, \dfrac{15\pi}{8}\right\}$

13) $\left\{\dfrac{\pi}{3}, \dfrac{5\pi}{12}, \dfrac{5\pi}{6}, \dfrac{11\pi}{12}, \dfrac{4\pi}{3}, \dfrac{17\pi}{12}, \dfrac{11\pi}{6}, \dfrac{23\pi}{12}\right\}$

14) $\left\{\dfrac{\pi}{3}, \dfrac{2\pi}{3}\right\}$

15) $\left\{\dfrac{5\pi}{24}, \dfrac{7\pi}{24}, \dfrac{17\pi}{24}, \dfrac{19\pi}{24}, \dfrac{29\pi}{24}, \dfrac{31\pi}{24}, \dfrac{41\pi}{24}, \dfrac{43\pi}{24}\right\}$

16) $\left\{\dfrac{3\pi}{2}\right\}$

17) $\left\{\dfrac{\pi}{12}, \dfrac{7\pi}{12}, \dfrac{13\pi}{12}, \dfrac{19\pi}{12}\right\}$

18) $\left\{\dfrac{5\pi}{6}, \dfrac{7\pi}{6}\right\}$