SATPREP

Trigonometric Equation

Name_____

Date_____

Solve each equation for $-\pi \le \theta \le \pi$.

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

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

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

4) $-1 + \cos\left(\dfrac{\theta}{3} + \dfrac{\pi}{6}\right) = -1$

5) $-\sqrt{2} = -2\cos\left(-3\theta + \dfrac{5\pi}{6}\right)$

6) $5 + \sin\left(-\theta + \dfrac{5\pi}{4}\right) = \dfrac{10 + \sqrt{3}}{2}$

7) $\dfrac{9}{2} = 5 + \sin\left(3\theta + \dfrac{7\pi}{6}\right)$

8) $\dfrac{2}{3} \cdot \sin\left(3\theta + \dfrac{3\pi}{4}\right) = -\dfrac{\sqrt{2}}{3}$

9) $-4 + \cos\left(\dfrac{\theta}{3} + \dfrac{2\pi}{3}\right) = -2$

10) $-3\sqrt{3} = 3\tan\left(2\theta + \pi\right)$

Answers to Trigonometric Equation

1) No solution.

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

3) $\left\{-\dfrac{7\pi}{9}, -\dfrac{2\pi}{3}, -\dfrac{\pi}{9}, 0, \dfrac{5\pi}{9}, \dfrac{2\pi}{3}\right\}$

4) $\{\pi\}$

5) $\left\{-\dfrac{35\pi}{36}, -\dfrac{17\pi}{36}, -\dfrac{11\pi}{36}, \dfrac{7\pi}{36}, \dfrac{13\pi}{36}, \dfrac{31\pi}{36}\right\}$

6) $\left\{\dfrac{7\pi}{12}, \dfrac{11\pi}{12}\right\}$

7) $\left\{-\dfrac{2\pi}{3}, -\dfrac{4\pi}{9}, 0, \dfrac{2\pi}{9}, \dfrac{2\pi}{3}, \dfrac{8\pi}{9}\right\}$

8) $\left\{-\pi, -\dfrac{\pi}{2}, -\dfrac{\pi}{3}, \dfrac{\pi}{6}, \dfrac{\pi}{3}, \dfrac{5\pi}{6}, \pi\right\}$

9) No solution.

10) $\left\{-\dfrac{2\pi}{3}, -\dfrac{\pi}{6}, \dfrac{\pi}{3}, \dfrac{5\pi}{6}\right\}$