Name_____

Trig Equations w/ Factoring + Fundamental Identities   Date_____

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

1) $1 - 2\tan^2 \theta = -\tan^2 \theta$

2) $4\sin^2 \theta + 4 = 5$

3) $3\csc^2 \theta = 1 + 2\csc^2 \theta$

4) $\sec^2 \theta - 6 = -4$

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

6) $\tan\theta\sin\theta - 4\tan\theta = -3\tan\theta$

7) $\sqrt{2}\cot\theta - 3\sec\theta = \cot\theta\sec\theta - 3\sec\theta$

8) $\sqrt{3}\sec\theta + \sec\theta\cot\theta = 0$

Find the general solution

9) $\sin^2 \theta = \sin\theta + 1 - \sin^2 \theta$

10) $3\sin\theta + 2\sin^2 \theta = -1$

11) $\cos^2 \theta = 2 + 2\sin\theta$

12) $\sin^2 \theta + 2 - \cos^2 \theta = 3\sin\theta$

13) $-\cos\theta + \sin\theta = 1$

14) $3\sin\theta = \sqrt{3}\sin\theta + 3\cos\theta + 3\sin\theta$

Name_____

Trig Equations w/ Factoring + Fundamental Identities   Date_____

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

1) $1 - 2\tan^2 \theta = -\tan^2 \theta$

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

2) $4\sin^2 \theta + 4 = 5$

$$\left\{ \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$$

3) $3\csc^2 \theta = 1 + 2\csc^2 \theta$

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

4) $\sec^2 \theta - 6 = -4$

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

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

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

6) $\tan\theta\sin\theta - 4\tan\theta = -3\tan\theta$

$$\{0, \pi\}$$

7) $\sqrt{2}\cot\theta - 3\sec\theta = \cot\theta\sec\theta - 3\sec\theta$

$$\left\{ \frac{\pi}{4}, \frac{7\pi}{4} \right\}$$

8) $\sqrt{3}\sec\theta + \sec\theta\cot\theta = 0$

$$\left\{ \frac{5\pi}{6}, \frac{11\pi}{6} \right\}$$

* For all answers, ∧ is any integer

9) $\sin^2 \theta = \sin\theta + 1 - \sin^2 \theta$

$$\frac{\pi}{2} + 2\pi\text{∧}$$
$$\frac{7\pi}{6} + 2\pi\text{∧}$$
$$\frac{11\pi}{6} + 2\pi\text{∧}$$

10) $3\sin\theta + 2\sin^2 \theta = -1$

$$\frac{3\pi}{2} + 2\pi\text{∧}$$
$$\frac{7\pi}{6} + 2\pi\text{∧}$$
$$\frac{11\pi}{6} + 2\pi\text{∧}$$

11) $\cos^2 \theta = 2 + 2\sin\theta$

$$\frac{3\pi}{2} + 2\pi\text{∧}$$

12) $\sin^2 \theta + 2 - \cos^2 \theta = 3\sin\theta$

$$\frac{\pi}{2} + 2\pi\text{∧}$$
$$\frac{\pi}{6} + 2\pi\text{∧}$$
$$\frac{5\pi}{6} + 2\pi\text{∧}$$

13) $-\cos\theta + \sin\theta = 1$

$$\frac{\pi}{2} + 2\pi\text{∧}$$
$$\pi + 2\pi\text{∧}$$

14) $3\sin\theta = \sqrt{3}\sin\theta + 3\cos\theta + 3\sin\theta$

$$\frac{2\pi}{3} + \pi\text{∧}$$