NAME _____ DATE _____ PERIOD _____

7-5

Practice

Solving Trigonometric Equations

Solve each equation for principal values of x. Express solutions in degrees.

1. $\cos x = 3 \cos x - 2$

0°

2. $2 \sin^2 x - 1 = 0$

±45°

Solve each equation for $0° \leq x < 360°$.

3. $\sec^2 x + \tan x - 1 = 0$

0°, 135°, 180°, 315°

4. $\cos 2x + 3 \cos x - 1 = 0$

60°, 300°

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

5. $4 \sin^2 x - 4 \sin x + 1 = 0$

$\frac{\pi}{6}, \frac{5\pi}{6}$

6. $\cos 2x + \sin x = 1$

$0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi$

Solve each equation for all real values of x.

7. $3 \cos 2x - 5 \cos x = 1$

$\frac{2\pi}{3} + 2\pi k, \frac{4\pi}{3} + 2\pi k$

8. $2 \sin^2 x - 5 \sin x + 2 = 0$

$\frac{\pi}{6} + 2\pi k, \frac{5\pi}{6} + 2\pi k$

9. $3 \sec^2 x - 4 = 0$

$\frac{\pi}{6} + \pi k, \frac{5\pi}{6} + \pi k$

10. $\tan x (\tan x - 1) = 0$

$\pi k, \frac{\pi}{4} + \pi k$

11. ***Aviation*** An airplane takes off from the ground and reaches a height of 500 feet after flying 2 miles. Given the formula $H = d \tan \theta$, where H is the height of the plane and d is the distance (along the ground) the plane has flown, find the angle of ascent θ at which the plane took off.

about 2.7°