Precalculus Practice Worksheet **Name:** _____

Lesson 5.3 **Date:** _____ **Hour:** __

Show all work for full credit.

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

1. $2 \tan \theta + 2 = 0$
2. $2 \cos \theta = 1$
3. $2 \cos \theta + \sqrt{3} = 0$
4. $\sqrt{3} \cot \theta - 1 = 0$
5. $4 \sin \theta - 3 = 0$
6. $4 \sin \theta + 3 = 0$
7. $\left(2 \cos \theta + \sqrt{3}\right)(2 \cos \theta + 1) = 0$
8. $\sqrt{3} \tan \theta - 2 \sin \theta \tan \theta = 0$
9. $2 \cos^2 \theta + \cos \theta = 0$
10. $5 \cos \theta - 3 = 0$
11. $\tan \theta - 2 \cos \theta \tan \theta = 0$
12. $\tan \theta (\tan \theta + 1) = 0$
13. $(\cos \theta - 1)(2 \cos \theta - 1) = 0$
14. $\tan^2 \theta - \tan \theta = 0$

15. If a projectile is fired into the air with an initial velocity v at an angle of elevation θ, then the height h of the projectile at time t is given by $h = -16t^2 + vt \sin \theta$.

    a. Find the angle of elevation θ of a rifle barrel, to the nearest tenth of a degree, if a bullet fired at 1500 ft/s takes 2 s to reach a height of 750 ft.

    b. Find the angle of elevation of a rifle, to the nearest tenth of a degree, if a bullet fired at 1500 ft/s takes 3 s to reach a height of 750 ft.

Answers

1. $\frac{3\pi}{4}, \frac{7\pi}{4}$ **2.** $\frac{\pi}{3}, \frac{5\pi}{3}$ **3.** $\frac{5\pi}{6}, \frac{7\pi}{6}$ **4.** $\frac{\pi}{3}, \frac{4\pi}{3}$ **5.** 0.85, 2.29

6. 3.99, 5.44 **7.** $\frac{5\pi}{6}, \frac{7\pi}{6}, \frac{2\pi}{3}, \frac{4\pi}{3}$ **8.** $0, \frac{\pi}{3}, \frac{2\pi}{3}, \pi$

9. $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}$ **10.** 0.93, 5.36 **11.** $0, \frac{\pi}{3}, \frac{5\pi}{3}, \pi$

12. $0, \frac{3\pi}{4}, \pi, \frac{7\pi}{4}$ **13.** $0, \frac{\pi}{3}, \frac{5\pi}{3}$ **14.** $0, \frac{\pi}{4}, \pi, \frac{5\pi}{4}$

15a. 15.7° **15b.** 11.5°