Topics in Analytic Geometry   Answers

1. a. $y = -\dfrac{1}{12{,}800}x^2 + \dfrac{1}{2}$

   b. About 61.97 ft

2. About 21.91 ft

3. About 4.58 feet from the center on both sides; 22 ft

4. a. $\dfrac{x^2}{4} - \dfrac{7y^2}{300} = 1$

   b. 4.4 in.

5. a. $r = 20$

   b. $\left(20, \dfrac{3\pi}{4}\right)$; 20 represents the distance of the passenger from the center, and $\dfrac{3\pi}{4}$ represents the angle to which the car has rotated.

   c. $\left(-\dfrac{20\sqrt{2}}{2}, \dfrac{20\sqrt{2}}{2}\right)$; The car is about 14.14 feet to the left of the center and about 14.14 feet above the center.

6. a. 25 ft

   b. $\dfrac{\pi}{10}, \dfrac{\pi}{2}, \dfrac{9\pi}{10}, \dfrac{13\pi}{10},$ and $\dfrac{17\pi}{10}$

   c.
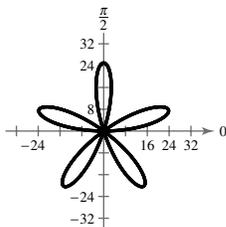
7. a. $x = (65 \cos 23)t$

   $y = (65 \sin 23)t - 16t^2$

   b. 1.587 sec

   c. About 94.95 feet down the field (or between the opposite "23-yard" and "24-yard" lines)