

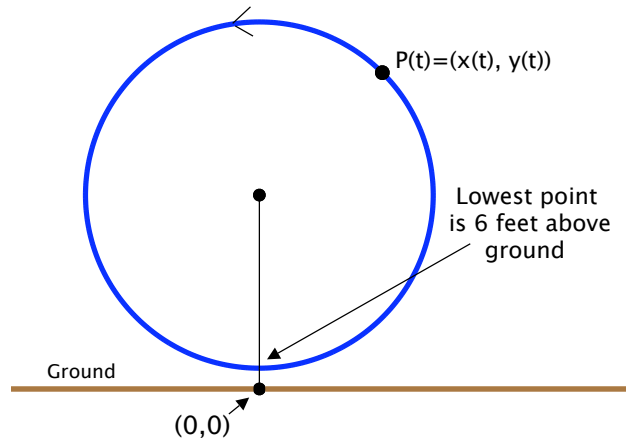
## Math 151 Homework #9 - due Tuesday 11/19

- **Problems from the book:** (Feel free to work on more problems in these sections for extra practice.)
  - §10.1: 1-9 (Odd), 2, 13, 15, 23, 24, 28, 33, 35, 46a
  - §10.2: 1-3, 5, 9, 17, 19, 25
  - §4.1: 3-7 (Odd), 10, 11, 17, 19, 23

- **Additional Problems:**

1. A ferris wheel of radius 50 feet rotates counter-clockwise at a constant speed of one revolution per minute during the ride. The lowest point of the ride is 6 feet above the ground.

Let  $P(t) = (x(t), y(t))$  be the coordinates of the rider at time  $t$  assuming the rider boards the ride at the lowest point at time 0 minutes.



- (a) Find  $x(t)$  and  $y(t)$  given the location of the origin  $(0,0)$  in the diagram.
- (b) The ride is 3 minutes long. Find all of the times at which the rider is 81 feet above the ground.
- (c) Compute the horizontal and vertical velocities  $x'(t)$  and  $y'(t)$ , respectively.
- (d) When is the horizontal velocity equal to zero? Indicate in the diagram the location of the rider at these times.
- (e) When will the horizontal velocity be a maximum or minimum? What is the maximum or minimum horizontal velocity and indicate in the picture the location of the rider at these times.