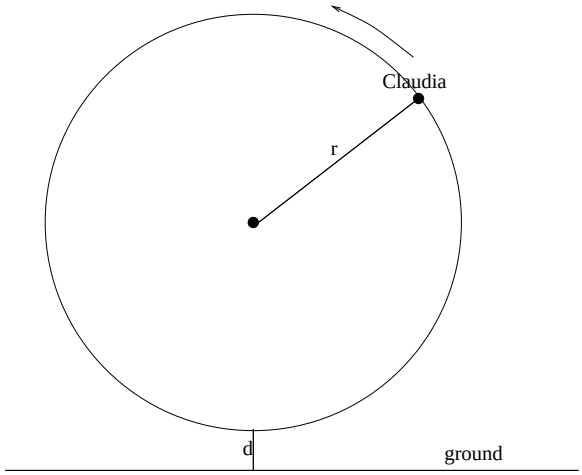
Name _____

Math 120E (QUIZ 6, November 13, 1997)

Instructions: You have 25 minutes for this quiz. **Show your work; NO CREDIT for answers only.**

Claudia is riding a ferris wheel as pictured. Her height above the ground at time t seconds is given by the formula

$$h(t) = 50\sin(\frac{1}{3}t - \frac{\pi}{4}) + 55$$



1. (1 point) Find r, the radius of the ferris wheel.

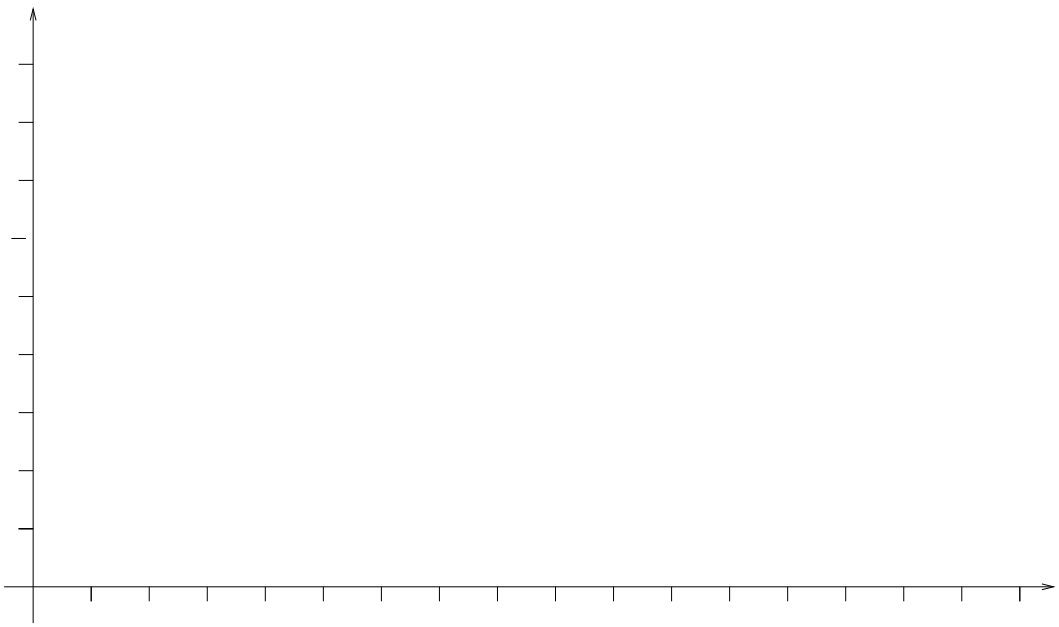
2. (1 point) Find d the height of the bottom of the ferris wheel above the ground.

3. (1 point) How long does it take the wheel to turn one complete revolution?

4. (1 point) Rewrite the equation for $h(t)$ in the form

$$h(t) = A\sin(\frac{2\pi}{B}(t - C)) + D$$

5. (2 points) Sketch the graph of $h(t)$ for at least one complete cycle. Clearly label the coordinates of the first maximum point and the first minimum point on your graph.



6. (4 points) Find all the times in the first 25 seconds that Claudia is exactly 65 feet above the ground. Clearly show your work, using the graph above if necessary. If you have a graphing calculator, "zooming in", using "trace" or solvers, etc. will NOT be sufficient justification for your answer.