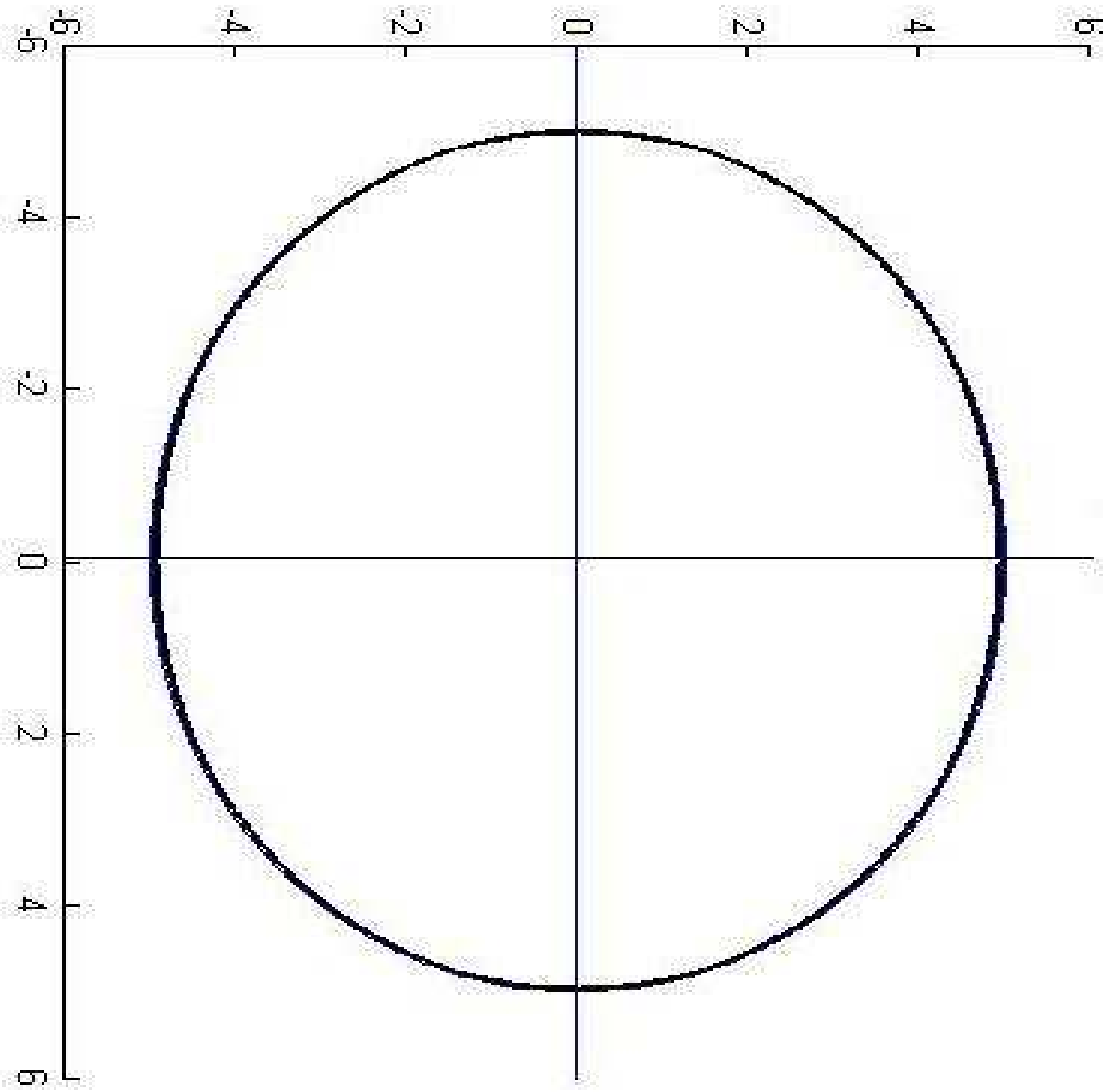
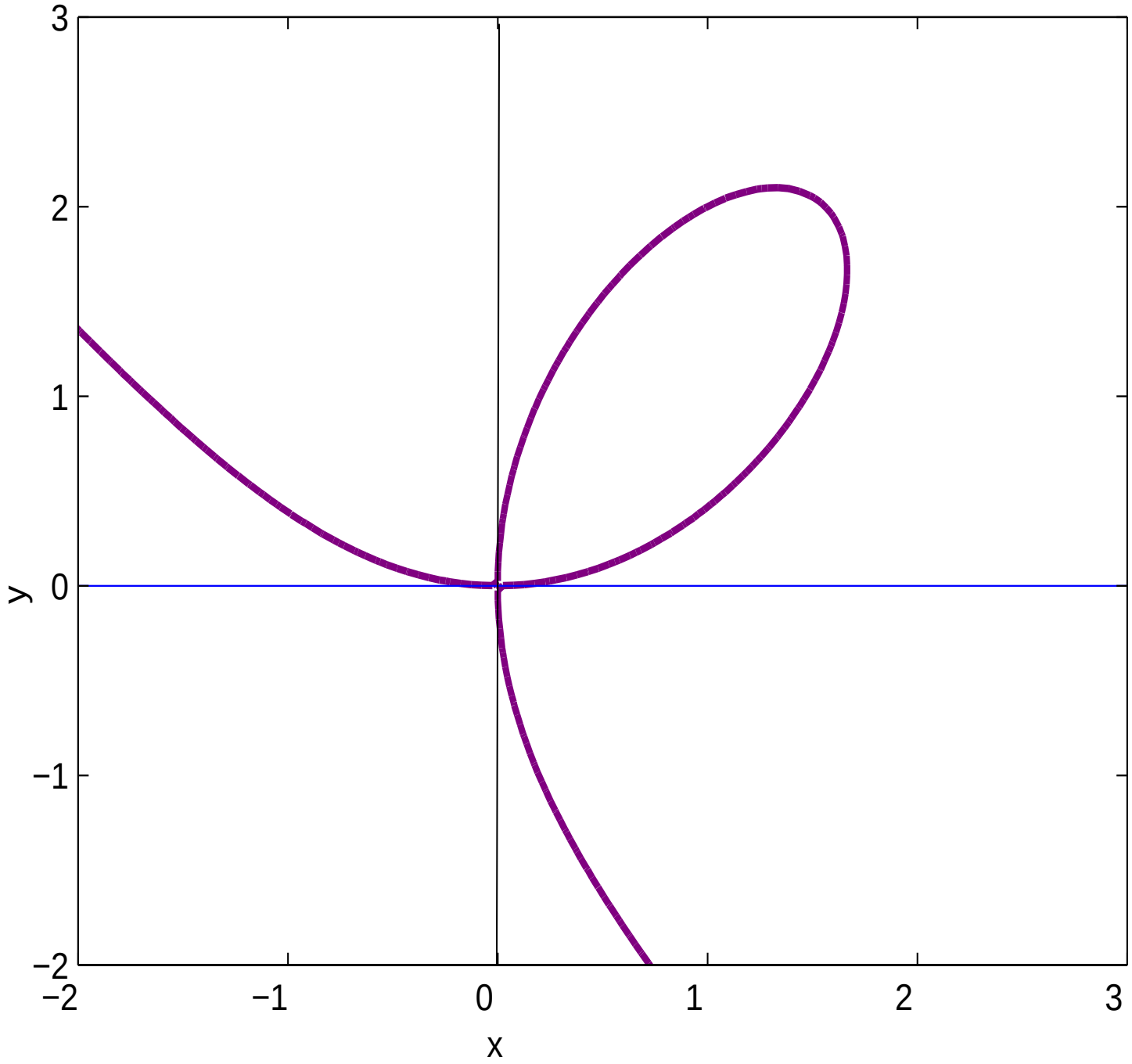
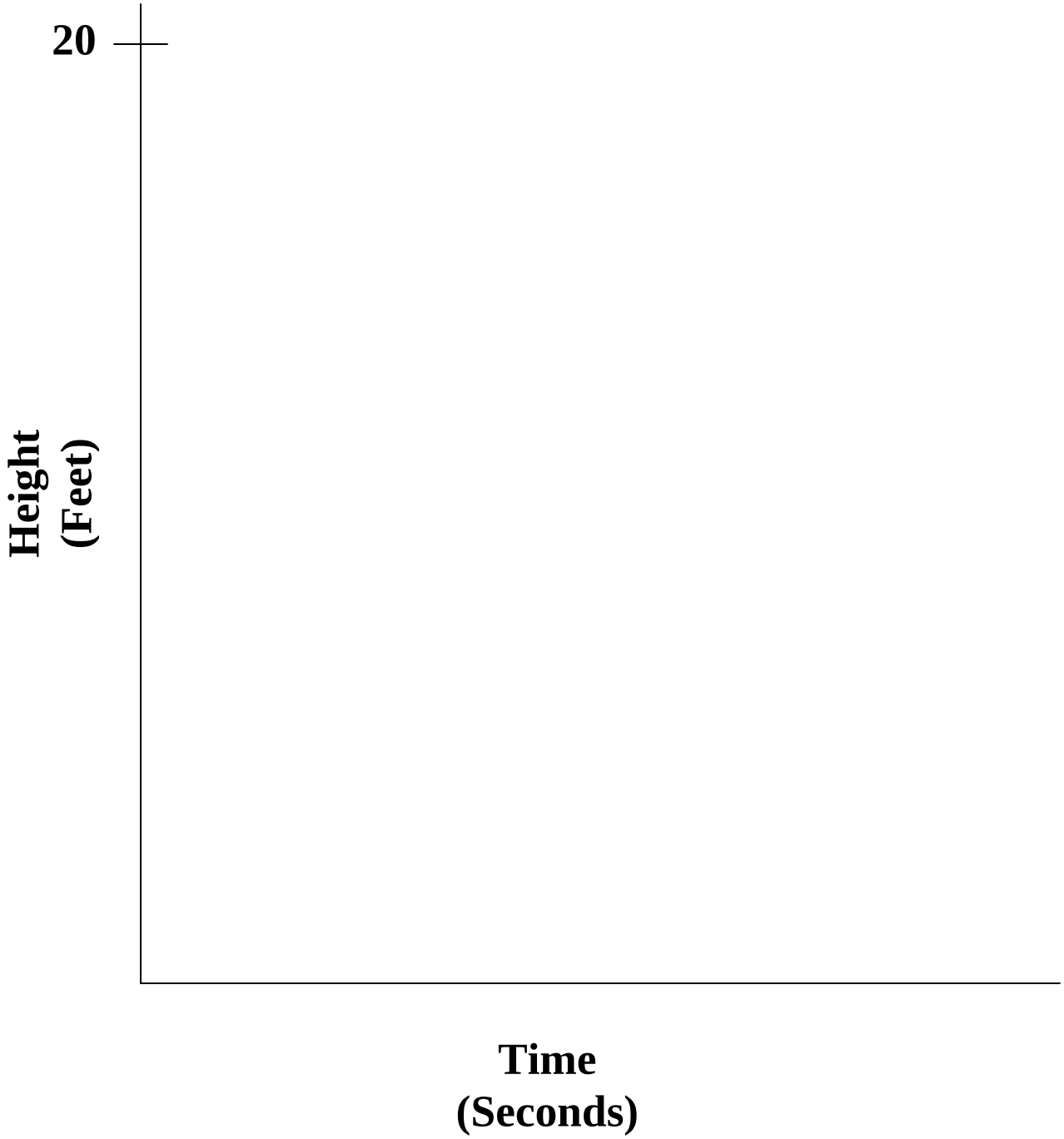
Overhead 1, Graph 1





Overhead 2, Graph 2

Overhead 3, Graph 3



Related Rates Problems

1. A ladder 20 feet long leans against a vertical wall. A man is standing at the top of the ladder. If the lower end is being moved away from the wall at a rate of 2 feet per second, how fast is the person falling when the bottom of the ladder is 3 feet from the wall?

2. How fast is the person in the previous problem falling when the bottom of the ladder is 16 feet from the wall?

3. The total revenue from the sale of x stereos is given by $R(x) = 1000x - x^2$ where x = # of stereos sold and x depends on time t. How fast is our revenue changing when we are selling the 400^{th} stereo and the company is selling stereos at a rate of 10 stereos per day?

4. Suppose that the price p and number of sales x of a certain item are related by the equation $5p + 4x + 2px = 60$. And suppose p and x are functions of time (t). Find the rate at which x is changing when x = 3 items, p = 5 dollars, and $\frac{dp}{dt} = 1.5$ dollars per day.

5. Suppose Lyle and Rich are riding their bikes. They begin at the same spot. Lyle travels north at a rate of 15 mph, and Rich travels east at a rate of 20 mph. After two hours, how far apart are Lyle and Rich?

6. Suppose $x^3 + 5p^3 = 445$. Find $\frac{dp}{dt}$ when $x = 5$ and $\frac{dx}{dt} = 16$.