

11.10 Lab problems

Exercise 11.10.1. The points (x, y) satisfying the relation below forms a circle:

$$(x - 2)^2 + (y - 3)^2 = 25.$$

- (a) Verify that the point $(5, 7)$ is on this circle.
- (b) Find the slope of the tangent line to this circle at the point $(5, 7)$.

Exercise 11.10.2. The points (x, y) satisfying the relation below forms an ellipse:

$$(x - 2)^2 + 4(y - 3)^2 = 25.$$

- (a) Verify that the point $(5, 5)$ is on this ellipse.
- (b) Find the slope of the tangent line to this ellipse at the point $(5, 5)$.

Exercise 11.10.3. Hiro cannot visualize the curve defined by the set of points (x, y) satisfying the relation

$$\frac{x3^y}{y} = 1.$$

Regardless, can Hiro compute the slope of the tangent line to this curve at the point $(\frac{1}{3}, 1)$? What is that slope?

Exercise 11.10.4. Consider the curve defined by the equation $y - \cos(xy) = 0$. Find a formula for the slope of the tangent line to this curve at a point (x, y) .