This lab consists of problem 21 on page 241 of your text. It is not really a computer exercise, but you might want to use Maxima to draw pictures for the (b) part. You may work in small groups on this assignment if you wish. If you do, hand in one paper for the group with everyone’s name on it.

21. (a) The slope of a line is just the tangent of the angle that line makes with the x-axis (or any horizontal line). Use this fact and the trigonometric identity

\[ \tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y} \]

to show that if two lines \( L_1 \) and \( L_2 \) have slopes \( m_1 \) and \( m_2 \), and if their angle of intersection is \( \alpha \), then

\[ \tan \alpha = \frac{m_1 - m_2}{1 + m_1 m_2} \]

(b) The angle between two curves that intersect at a point \( P \) is defined to be the angle between their tangent lines. Use part (a) to find, correct to the nearest degree, the angle between each pair of curves at each intersection.

(i) \( y = x^2 \) and \( y = (x - 2)^2 \)

(ii) \( x^2 - y^2 = 3 \) and \( x^2 - 4x + y^2 + 3 = 0 \)