1) Find the equation of the tangent line of the curve

$$y^2 - x^3 + x + 5 = 0$$

at the point $(2, 1)$.

Remark. While we could have solve this problem by writing the curve as a graph

$$y = \sqrt{x^3 - x - 5}$$

then compute the slope m and the intersection b with the y axes, we were doing that more elegantly using the gradient.

2) Find the equation of the tangent line of the curve

$$y^2 - x^3 + x + 5 - \sin(y - 1) = 0$$

at the point $(2, 1)$.

In the second problem, we could no more solve for y. The gradient method still works. Alternatively, we could have used implicit differentiation discussed in the last lecture.