

$$y-2 = 2x-3-xy+y$$

$$0 = 2x - xy + y - 5$$

$$0 = 2xy - xy$$

Normal line

$$f'(1) = 2-y$$

$$\text{Normal slope} = -1/f'(1) = \frac{-1}{2-y}$$

Equation at (1,2)

$$y-y_1 = m(x-x_1)$$

$$y-2 = \frac{-1}{2-y}(x-1)$$

$$y-2 = \frac{-x+1}{2-y}$$

$$(y-2)(2-y) = -x+1$$

$$2y - y^2 + 4 + y^2 = -x+1$$

$$2y - 4 = -x+1$$

$$-5 = -x-2y$$

$$5 = x+2y$$