6. [11 points] Consider the curve $\mathcal{C}$ defined by

$$e^{xy} = 4x - y^2 + 2.$$

a. [6 points] For this curve $\mathcal{C}$, find a formula for $\dfrac{dy}{dx}$ in terms of x and y. Remember to show your work clearly.

Answer: $\dfrac{dy}{dx} = $ _____

b. [2 points] Exactly one of the points below lies on the curve $\mathcal{C}$. Circle that one point.

$(2, 0)$ $\qquad\qquad$ $(1, -2)$ $\qquad\qquad$ $(1, 1)$ $\qquad\qquad$ $(0, -1)$

c. [3 points] Find an equation for the tangent line to the curve $\mathcal{C}$ at the point you chose in part (b).

Answer: $y = $ _____