Lesson 23 (Computational Graphs) Consider the function

$$y = f(x_1, x_2, x_3) = \sin(x_1 x_2 + x_3) + e^{x_1 + x_3} + x_3.$$

Compute the gradient vector

$$\nabla f(x_1, x_2, x_3) = \begin{pmatrix} \frac{\partial y}{\partial x_1} \\ \frac{\partial y}{\partial x_2} \\ \frac{\partial y}{\partial x_3} \end{pmatrix}$$

evaluated at $x_1 = 1$, $x_2 = 1$, and $x_3 = 1$ by using the computational graph on the back side.

Answer: $\begin{pmatrix} \cos(2) + e^2 \\ \cos(2) \\ \cos(2) + e^2 + 1 \end{pmatrix}$