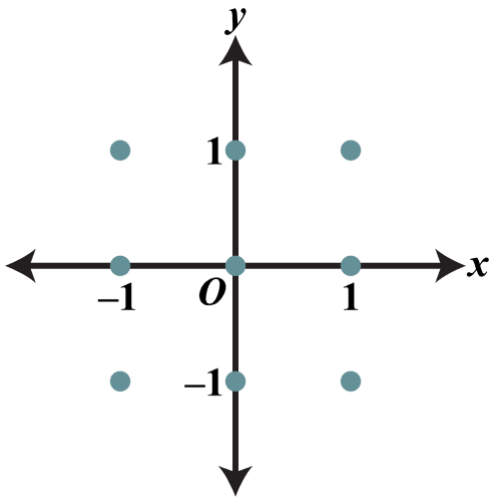
FREE RESPONSE

*This problem is intended to be solved **without** the use of a calculator.*

Consider the curve defined by the equation $\frac{dy}{dx} = (y+1)^2 \sin\left(\frac{\pi}{2}x\right)$.

(a) On the axes provided, sketch a slope field for the given differential equation at the nine points indicated.



(b) There is a horizontal line with equation $y = c$ that satisfies this differential equation. Find the value of c.

(c) Find the particular solution $y = f(x)$ to the differential equation with the initial condition $f(1) = 0$.