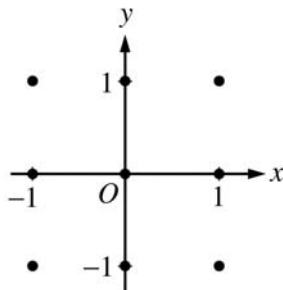


**2006 AP<sup>®</sup> CALCULUS AB FREE-RESPONSE QUESTIONS (Form B)**

5. Consider the differential equation  $\frac{dy}{dx} = (y - 1)^2 \cos(\pi x)$ .

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

(Note: Use the axes provided in the exam booklet.)



(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  $f(1) = 0$ .

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