

2008 AP[®] CALCULUS AB FREE-RESPONSE QUESTIONS (Form B)

6. Consider the closed curve in the xy -plane given by

$$x^2 + 2x + y^4 + 4y = 5.$$

- (a) Show that $\frac{dy}{dx} = \frac{-(x+1)}{2(y^3+1)}$.
- (b) Write an equation for the line tangent to the curve at the point $(-2, 1)$.
- (c) Find the coordinates of the two points on the curve where the line tangent to the curve is vertical.
- (d) Is it possible for this curve to have a horizontal tangent at points where it intersects the x -axis?
Explain your reasoning.
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WRITE ALL WORK IN THE EXAM BOOKLET.

END OF EXAM