Bear in mind that in class we derived the wave equation for a string under the assumption that $A \ll \lambda$ [See Problem 5]. In this case obviously

$$|v_y|_{max} \ll v.$$

---

(4) PROBLEM #4:

In this problem we are given a WAVE EQUATION of the form

$$\frac{1}{c^2}\frac{\partial^2 y}{\partial t^2} - \frac{\partial^2 y}{\partial x^2} + a^2 \frac{\partial^4 y}{\partial x^4} = 0 \qquad (4)$$

Although this is a more complicated wave equation than the one considered in class (by the addition of the "$\frac{\partial^4 y}{\partial x^4}$" term), we start with the guess that it still admits the familiar STANDING WAVE SOLUTION

$$y(x,t) = A\cos(kx)\cos(\omega t)$$