Particle \( F=ma \) (n-t):  Example Problem 6

A 10 lb slider moves along a smooth rod in a vertical plane. The rod has been bent into a non-circular path defined by the given function. At the location shown, its speed is 6 fps. Please determine:

(a) The magnitude of the slider’s acceleration.
(b) The magnitude of the force between the rod and the slider.

\[ y = 9 - \frac{1}{4} x^2 \]

\[ (x,y) = (2,8) \text{ ft} \]

\[ 10 \text{ lb slider} \]

\[ \rho = \left| \frac{1 + (y')^2}{y''} \right|^{3/2} \]