What is vertical?

(a) Calculate the angular deviation $\epsilon$ of a plumb line from the direction to the Earth's center at a point of latitude $\lambda$. (b) At what latitude does $\epsilon$ have its maximum value? (c) State $\epsilon_{\text{max}}$ in arc seconds. Use the value $g = 9.81 \text{m/s}^2$ for the acceleration due to gravity.

Solution: