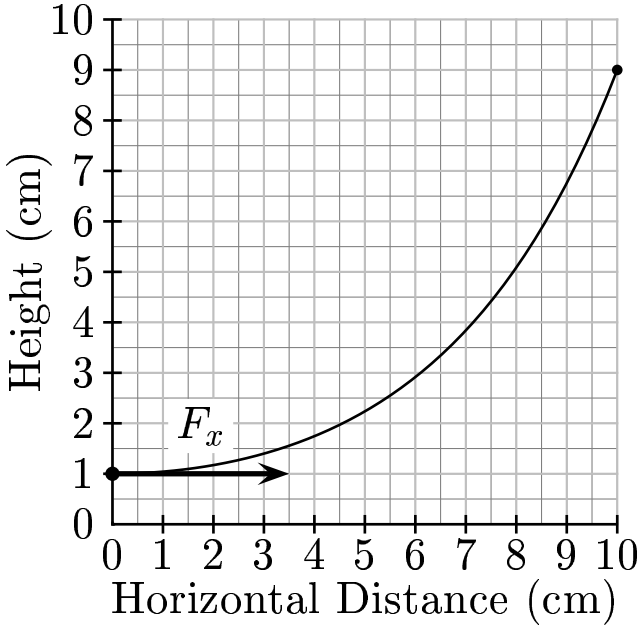


Given: $g \approx 10.0$ m/s^2 .

A thin flexible gold chain of uniform linear density has a mass of 100 g. It hangs between two 10 cm high vertical walls (vertical axes) which are a distance of 10 cm apart horizontally (x-axis), as shown in the figure.

Find the magnitude of the horizontal force F_x the gold chain exerts on the left-hand wall.

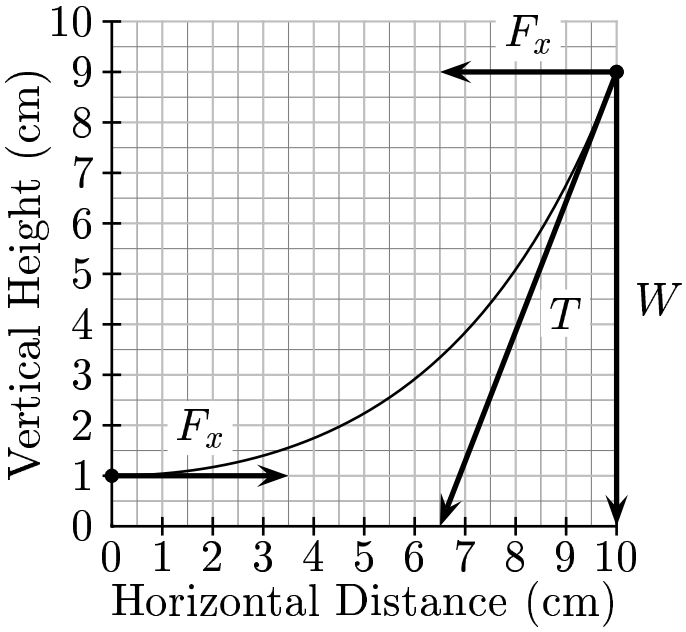
A) $F_x \approx 390$ mN

B) $F_x \approx 430$ mN

C) $F_x \approx 470$ mN

D) $F_x \approx 510$ mN

E) $F_x \approx 550$ mN



The weight W of the gold chain is totally supported by the right-hand wall and is directed downward. The tension T is tangent to the gold chain at the right-hand wall.

The force of gravity is

$$W = m\,g$$
$$= (100\ \text{g})\,(10\ \text{m/s}^2) = 1000\ \text{mN}.$$

Since $\tan\theta = \dfrac{W}{F_x} = \dfrac{9.0}{3.5}$.

The magnitude of the horizontal force, $F_x = \dfrac{W}{\tan\theta} = 1000\,\dfrac{3.5}{9.0} = 388.9\ \text{mN}$.

Answer **A**.

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