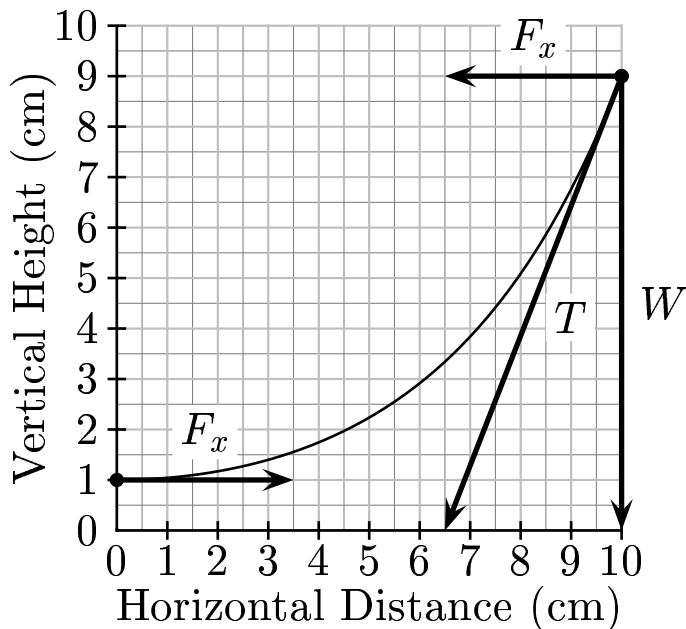


Given: $g \approx 10.0 \text{ m/s}^2$.

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) $F_x \approx 390 \text{ mN}$
- B) $F_x \approx 430 \text{ mN}$
- C) $F_x \approx 470 \text{ mN}$
- D) $F_x \approx 510 \text{ mN}$
- E) $F_x \approx 550 \text{ mN}$



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

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

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

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

Answer **A**.