

The prey hits the ground when $y = 0 \Leftrightarrow 204 - \frac{1}{51}x^2 = 0$
 $\Leftrightarrow x^2 = 51 \cdot 204 \Rightarrow x = \sqrt{10404} = 102$, since x must be positive. $y' = -\frac{2}{51}x \Rightarrow 1 + (y')^2 = 1 + \frac{4}{51^2}x^2$, so the distance traveled by the prey is

$$L = \int_0^{102} \sqrt{1 + \frac{4}{51^2}x^2} dx = \int_0^4 \sqrt{1 + u^2} \left(\frac{51}{2} du\right) \quad \left[\begin{array}{l} u = \frac{2}{51}x, \\ du = \frac{2}{51} dx \end{array} \right]$$

$$= \frac{51}{2} \left[\frac{1}{2}u \sqrt{1 + u^2} + \frac{1}{2} \ln(u + \sqrt{1 + u^2}) \right]_0^4 \approx 237.0 \text{ m}$$