[mex203] Position-dependent acceleration

Consider a particle of mass m moving along the x-axis. The particle experiences an acceleration that depends on its position as follows:

$$a = 6\gamma x^{1/3}, \quad \gamma = 1\text{m}^{2/3}\text{s}^{-2}.$$

What time does it take the particle to move from position $x = 1\text{m}$ to position $x = 8\text{m}$ if it has zero velocity at $x = 0$?

Solution: