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

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

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

Solution: