[mex149] Chain sliding off the edge of table with friction

A uniform chain of total length A has a portion B $(0 < B < A)$ hanging over the edge of a table with a rough surface. The coefficient of kinetic friction is μ. Show that the time it takes the chain to slide off the table if it starts from rest is

$$T = \sqrt{\frac{A}{g(1+\mu)}} \ln\left(\frac{A + \sqrt{A^2 - [B(1+\mu) - A\mu]^2}}{B(1+\mu) - A\mu}\right).$$

Solution: