2-7. A train consists of an engine and three cars, and the mass of the engine and three cars are $m_E = 5\times10^4$ kg and $m_A = m_B = m_C = 2\times10^4$ kg . The wheels of the cars roll freely, and the wheels of the engine provide a resultant frictional tractive force *F*, which gives the train forward motion. A normally distributed tractive force $F \sim N(50, 2)$ kN starts the train from rest, after $t = 30$ s , determine the velocity of the train.

Solution: $v \sim N(177.78, 3.85^2)$ m/s