\[ \theta = \tan^{-1} \left( \frac{3}{30} \right) = 0.0996687 \]

\[ F = 1480.6 \text{ lb} \]

\[ d = 13.05 \text{ ft} \]
For $0 \leq t \leq T/2$, $i(t) = 10e^{-t/T} \sin \left(\frac{2\pi t}{T}\right)$

For $T/2 < t \leq T$, $i(t) = 0$