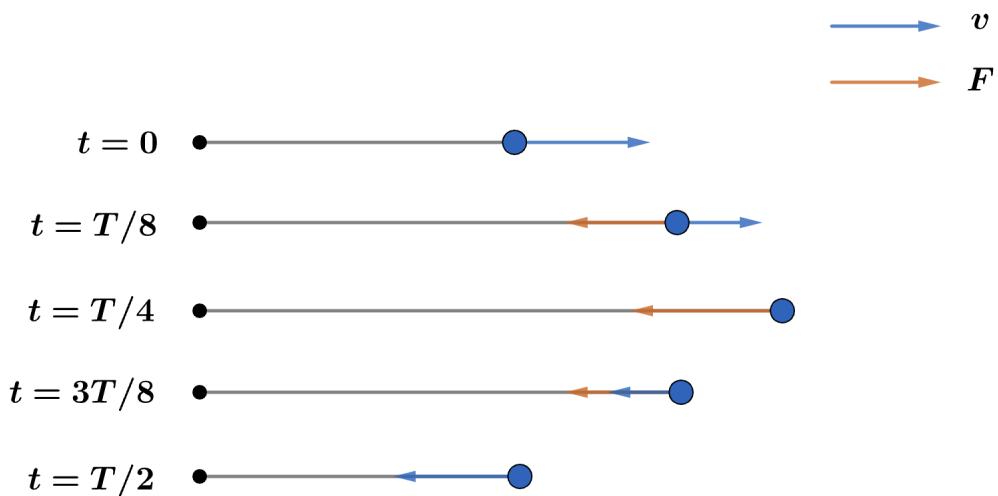


2009 F=ma Exam: Problem 23

Kevin S. Huang

Recall the instantaneous power delivered to the mass is $P = Fv$ where F is the spring force and v is the velocity of the mass.



- At $t = 0$, there is no force on the mass so $P = 0$.
- At $t = T/8$, the force and velocity are pointing in opposite directions so $P < 0$.
- At $t = T/4$, the mass is at rest so $P = 0$.
- At $t = 3T/8$, the force and velocity are pointing in the same direction so $P > 0$.
- At $t = T/2$, there is no force so $P = 0$.

Thus, power delivered is first maximized at $t = 3T/8$ so the answer is D.