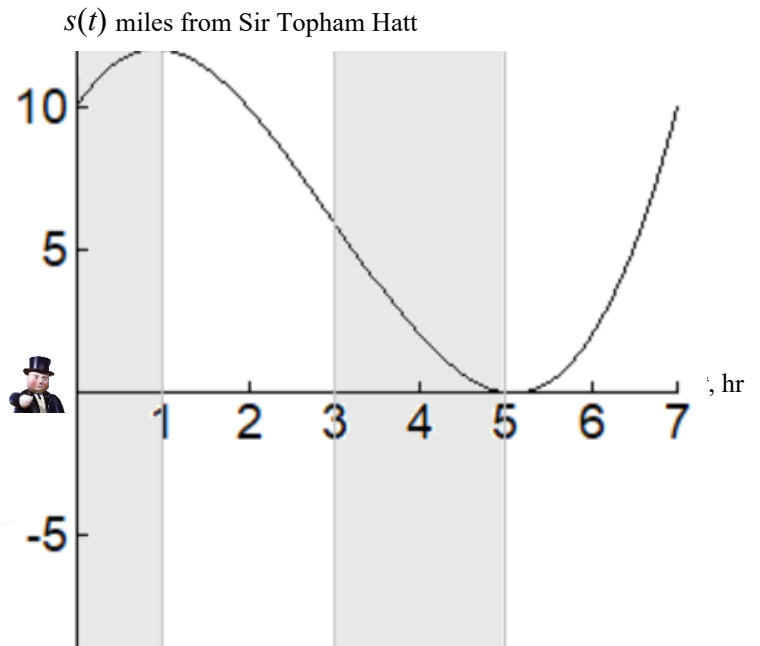


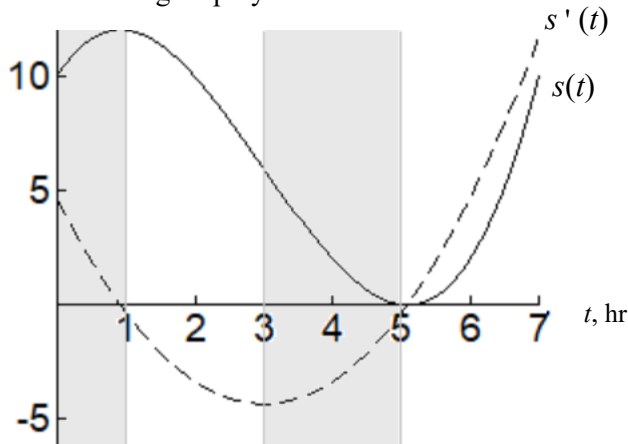
The Velocity and Acceleration of Thomas the Tank Engine

Thomas the Tank Engine is $d = s(t)$ miles from his boss Sir Topham Hatt III, where t is given in hours. The graph of $d = s(t)$ is shown for $0 \leq t \leq 7$. The derivative, $s'(t)$ is Thomas' instantaneous velocity $v(t)$. Recall $s'(t)$ also gives Thomas' trajectory of movement. The graph of $d = s(t)$ is shown for $0 \leq t \leq 7$. See his trip animated at users.pfw.edu/lamaster/ma165/ThomasTrip.htm

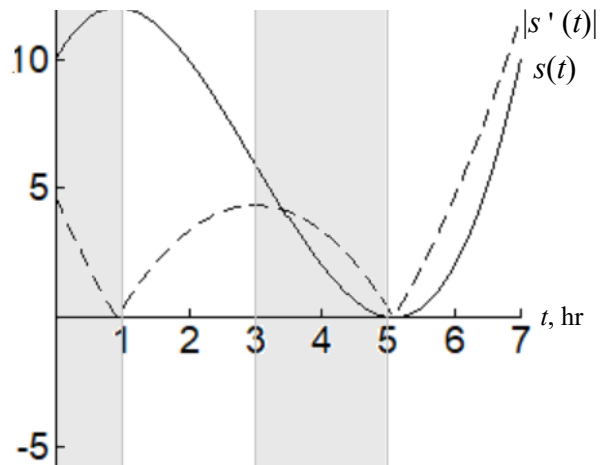


1. Mark on the graph what intervals is Thomas speeding up and slowing down.

2. The velocity is shown, dashed. What degree polynomial is the acceleration?



3. The speed is shown, dashed. Sketch the acceleration.



4. Mark on the graph of #3 what intervals is Thomas speeding up and slowing down. What do you notice?