Quiz 7

Name: _____

Suppose the speed of a cannonball (in ft/sec) t seconds after the gunpowder ignites is given by $S(t) = \frac{300}{t^2-2t+2}$.

(a) Find all critical points of $S(t)$.

(b) Use the first or second derivative test to determine whether each critical point from part (a) is a local minimum, a local maximum, or neither.

(c) Check the end behavior of $S(t)$ (this requires you to determine the domain of $S(t)$).

(d) Determine the maximum and minimum speed of the cannonball (i.e. determine the global maximum and minimum of $S(t)$).

(e) (Bonus 10 pts). Write an English sentence explaining why the first or second derivative test works for part (b). Phrase your answer in terms of what the first or second derivative tells you about the shape of the graph.