The due date has been changed to April 13, 2022.

Due: April 13, 2022

Points: 20

Remember, you must justify all your answers.

1. The classical batch processing system completely ignores the cost of increased waiting time for users. Consider a single batch characterized by the following parameters:
   - $M$ average mounting time
   - $T$ average service time per job
   - $N$ number of jobs
   - $S$ unit price of service time
   - $W$ unit price of waiting time per user

   Show that the optimal batch size minimizing the cost of service time and waiting time per user within a single batch is

   $$N_{opt} = \sqrt{\frac{MS}{TW}}$$