8.F Heart Rate Monitoring

Task

Serena is starting a new workout routine and wants to keep track of her heart rate to make sure that she is exercising at the optimum level. First she did a warm-up, then she did her training exercises, then she did a cool-down.

- Before beginning her workout, Serena's resting heart rate was 60 beats per minute.
- She started her workout with a warm-up. While warming up, her heart rate increased at a constant rate of 8 beats per minute each minute.
- She warmed up for 10 minutes.
- After her warm up, her heart rate held steady throughout her training exercises, which lasted for 30 minutes.
- After her training exercises, she walked for 20 minutes as a cool-down and her heart rate decreased at a constant rate, finally returning to her rest rate of 60 beats per minute by the end of her cool-down.

a. Construct a graph of Serena's heart rate, h in beats per minute (bpm), as a function of time, t in minutes, where $t = 0$ is when she started her warmup. Make sure to include the times before, during, and after her workout.

b. For about how many minutes total was her heart rate at 100 beats per minute or above?

c. Compare how quickly her heart rate changed during her warm-up versus how quickly her heart rate changed during her cool-down.