

7. [7 points] Alicia decides to go for a run before completing her math homework. Let $g(m)$ be the time (in hours) that Alicia spends completing her math assignment if she runs m miles. Suppose that for $1.2 \leq m \leq 8$,

$$g(m) = 2m - 12.2 \ln(m) + 15 - \frac{14.4}{m}.$$

Note that on this interval, the derivative of g is given by the formula

$$g'(m) = \frac{2(m - 4.5)(m - 1.6)}{m^2}.$$

- a. [5 points] Find all values of m that maximize and minimize the function $g(m)$ on the interval $1.2 \leq m \leq 8$. Use calculus to find your answers, and be sure to show enough evidence that the points you find are indeed global extrema.

For each answer blank below, write “NONE” if appropriate.

Answer: Global max(es) at $m =$ _____

Answer: Global min(s) at $m =$ _____

- b. [2 points] Assuming that Alicia runs at least 1.2 miles and at most 8 miles, what is the shortest amount of time Alicia could spend completing her homework?
Remember to include units.

Answer: Shortest time: _____