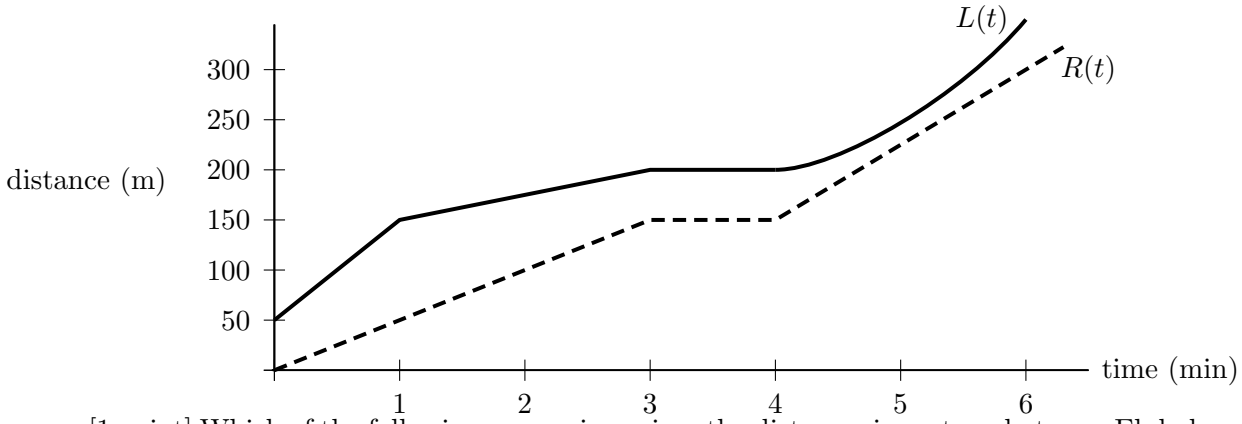
5. [14 points] Elphaba the squirrel is panicking because she has noticed that a human, Erin, is watching her. Elphaba starts to run and Erin is soon in full-blown pursuit as they both run straight down the street. Let $R(t)$ be Erin's distance from their starting point (in meters) t minutes after the chase begins and $L(t)$ be Elphaba's distance from the starting point (in meters) t minutes after the chase begins. The graphs of $R(t)$ (dashed) and $L(t)$ (solid) for the first 6 minutes of the chase are shown below.



a. [1 point] Which of the following expressions gives the distance, in meters, between Elphaba and Erin t minutes after the chase begins? *Circle the* ONE *best option.*

i. $L'(t) - R'(t)$ ii. $R'(t) - L'(t)$ iii. $L(t) - R(t)$ iv. $R(t) - L(t)$ v. $R^{-1}(L(t))$ vi. $L^{-1}(R(t))$

b. [2 points] What is Erin's velocity when $t = 0.5$? *Be sure to include units.*

Answer: _____

c. [3 points] During which of the following time periods is Erin gaining on Elphaba? *Circle* ALL *correct answers.*

i. $0 \le t \le 0.75$ ii. $1.25 \le t \le 2.75$ iii. $3.25 \le t \le 3.75$ iv. $4.25 \le t \le 4.75$ v. $5.25 \le t \le 6$

d. [3 points] During which of the following time periods is there at least one time when Erin and Elphaba are travelling at the same speed? *Circle* ALL *correct answers.*

i. $0.25 \le t \le 0.75$ ii. $1.75 \le t \le 2.25$ iii. $2.25 \le t \le 2.75$ iv. $3.25 \le t \le 3.75$ v. $4.75 \le t \le 5.25$

e. [2 points] Circle all of the following events that could be occurring between the 3rd and the 4th minutes.

i. Elphaba is getting further from Erin.
ii. Erin is tying her shoe.
iii. Elphaba has stopped.
iv. Erin is gaining on Elphaba.

f. [3 points] What is Elphaba's average velocity over the first 3 minutes of the chase? *Be sure to include units.*

Answer: _____