6. [7 points] Continue to assume the setup of the previous problem, so Ivan is $x = f(t)$ meters east of his starting point t seconds after 12 noon, walking back and forth along a straight line. Suppose also that Opal is driving in circles around Ivan and blasting her car stereo, so that:

- the distance r, in meters, between Opal and Ivan t seconds after 12 noon is given by the function $r = g(t)$;
- when Ivan is r meters from Opal, the loudness of Opal's stereo in decibels as perceived by Ivan is given by $L(r) = 100 - 20\log(r)$. [Recall that "log" means log base 10.]

a. [2 points] Find $L'(10)$.

Answer: $L'(10) =$ _____

b. [5 points] At what rate is the loudness of Opal's stereo, as perceived by Ivan, changing with respect to time when Ivan is 10 meters from Opal and moving away from her at a speed of 2 meters per second? *Include units.*

Answer: _____