1. Consider a valley whose height h in meters is given by $h = \frac{x^2}{10} + \frac{y^2}{10}$, with x and y (and 10!) in meters. Suppose you are hiking through this valley on a trail given by

$$x = 3t \qquad y = 2t^2$$

with t in seconds (and where "3" and "2" have appropriate units).

(a) How fast are you climbing (rate of change of h) *per meter* along the trail when $t = 1$? *You may find it helpful to recall that $ds = |d\vec{r}|$.*

(b) How fast are you climbing *per second* when $t = 1$.

You should try to solve each of these problems in at least two ways.