1 The puddle

The depth of a puddle in millimeters is given by

$$h = \frac{1}{10}\big(1 + \sin(\pi x y)\big)$$

Your path through the puddle is given by

$$x = 3t \qquad y = 4t$$

and your current position is $x = 3$, $y = 4$, with x and y also in millimeters, and t in seconds.

(a) At your current position, how fast is the depth of water through which you are walking changing per unit time?

(b) At your current position, how fast is the depth of water through which you are walking changing per unit distance?

(c) **FOOD FOR THOUGHT** (optional)
There is a walkway over the puddle at $x = 10$. At your current position, how fast is the depth of water through which you are walking changing per unit distance *towards the walkway*.