Check your understanding

31. If f is differentiable and constant on the line $y = x$, what can you deduce?

    (a) $f_x(t, t) = f_y(t, t) = 0$ for all t.

    (b) $f_x(t, t) = f_y(t, t)$ for all t.

    (c) $f_x(t, t) = -f_y(t, t)$ for all t.

    (d) None of the above.

    Answer: (c).

    Explanation: The chain rule implies that $df(t, t)/dt = f_x(t, t) + f_y(t, t)$. We are given that $f(t, t)$ is constant, so $df(t, t)/dt = 0$.