Brief solutions to selected problems in homework week 8

1. Problem 2:

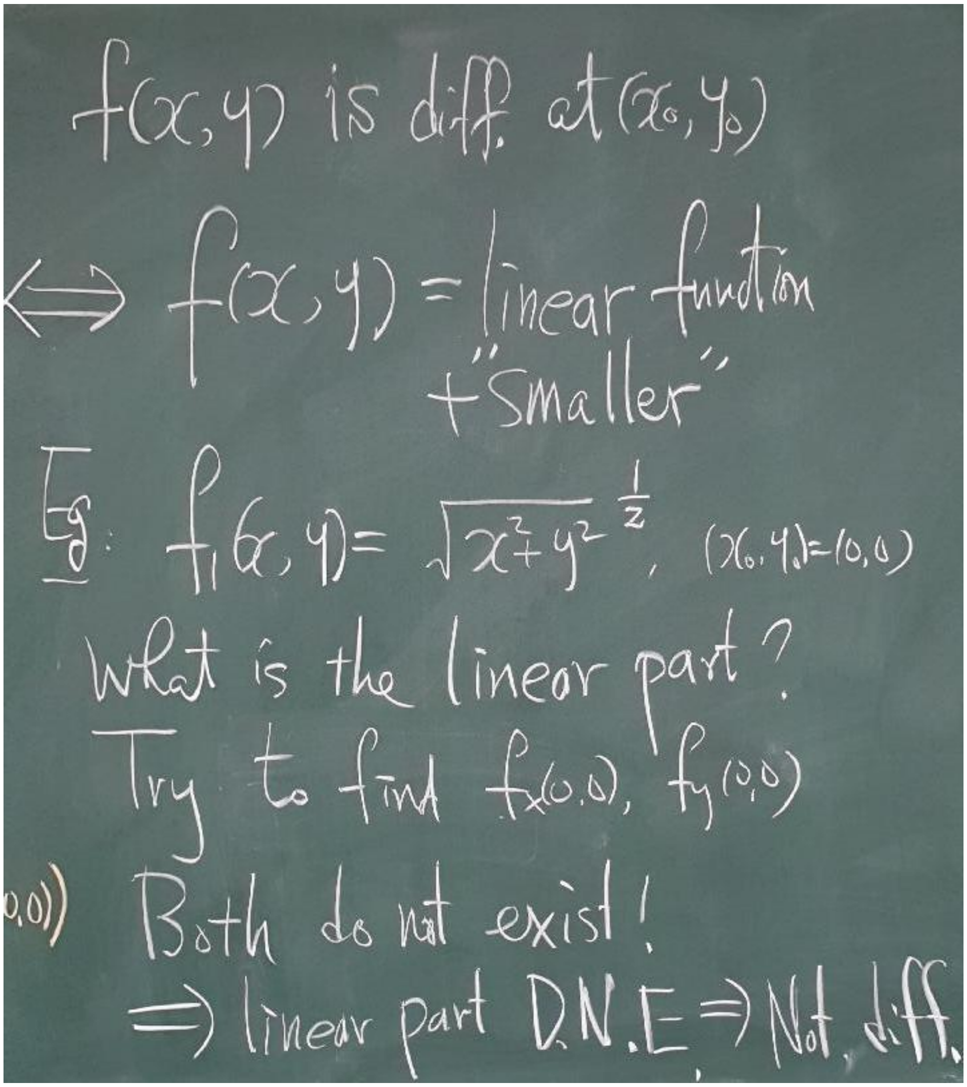

Figure 1: Problem 2

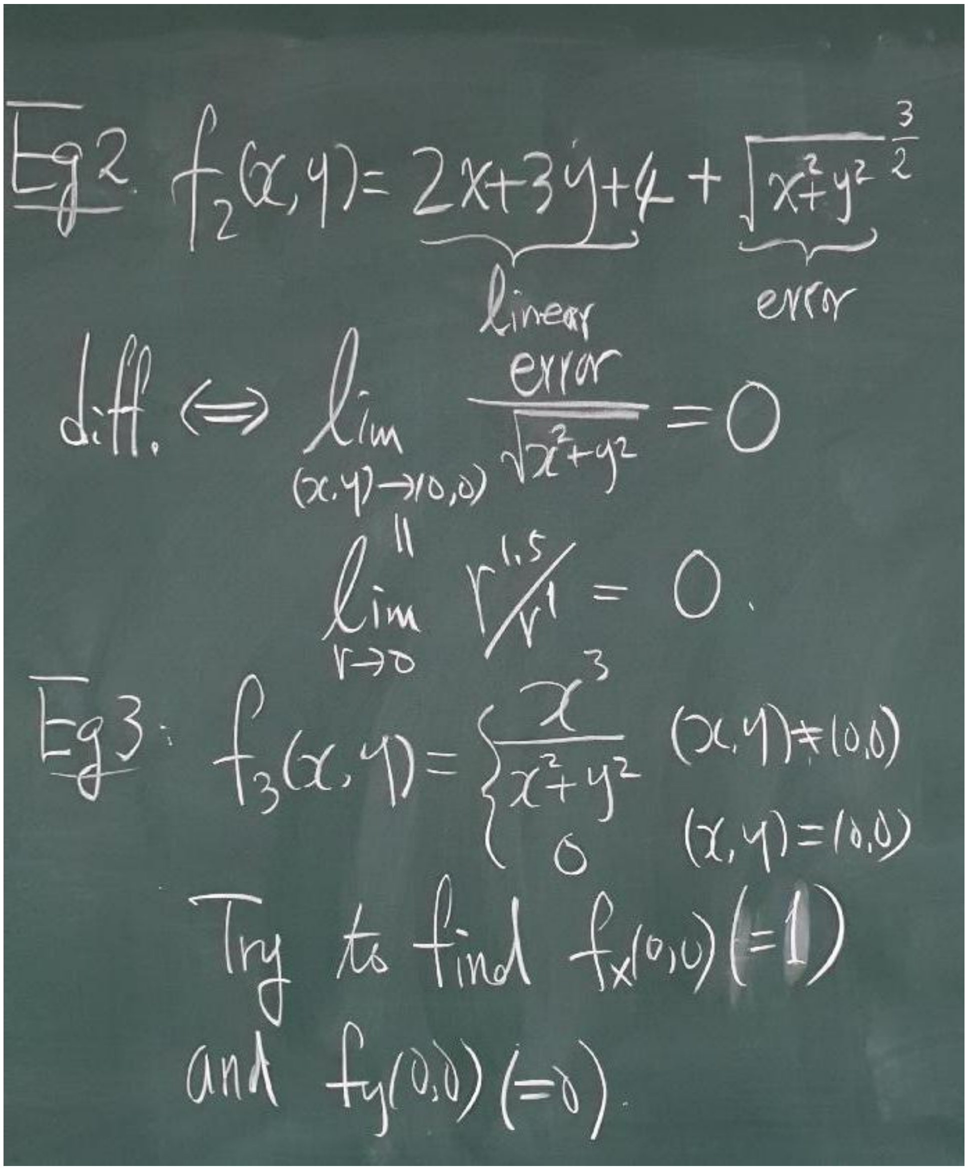

Figure 2: Problem 2, continued

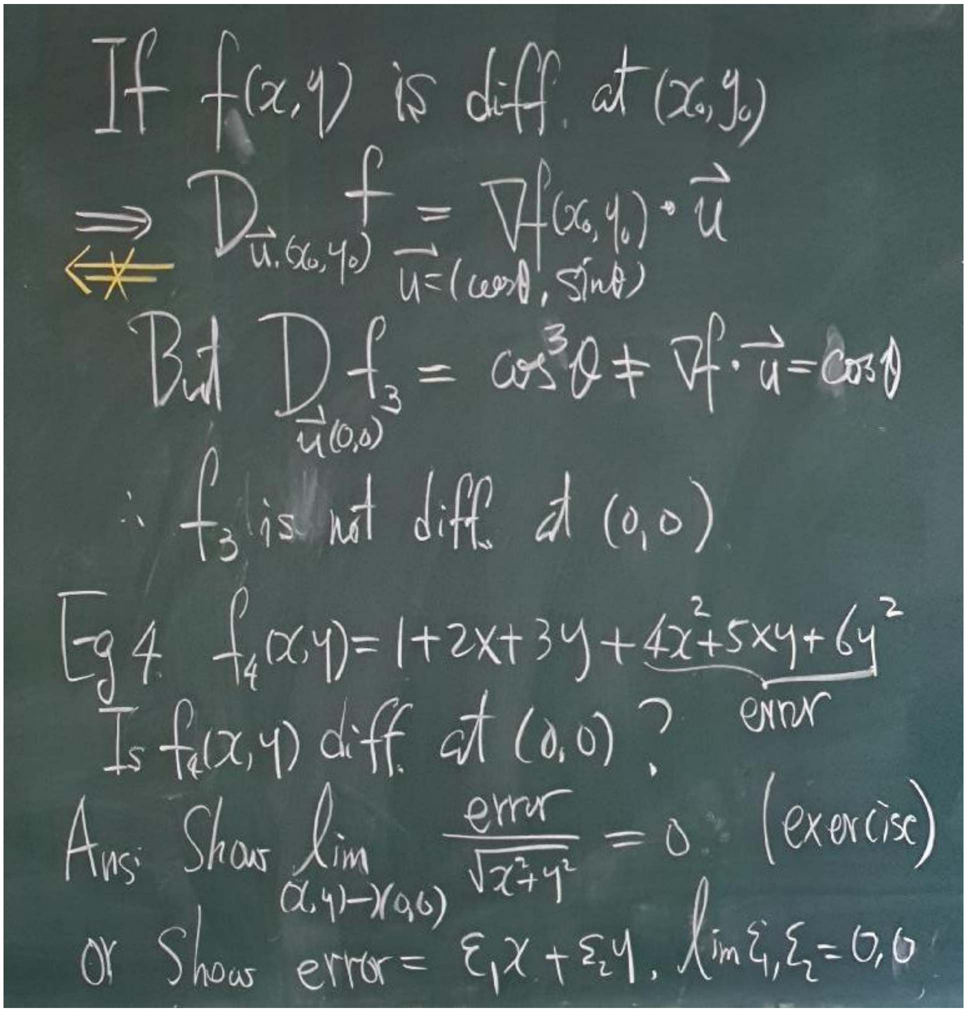

Figure 3: Problem 2, continued

2. (Extra credit) True or False?

   If $f_x(0,0)$, $f_y(0,0)$ and $D_{(\cos\theta,\sin\theta),(0,0)}f$ all exist and

$$D_{(\cos\theta,\sin\theta),(0,0)}f = f_x(0,0)\cos\theta + f_y(0,0)\sin\theta,$$

   then f is differentiable at $(0,0)$.