Brief solutions to selected problems in homework week 09

1. Section 4.1, problem 77:

   $f'(x) = \frac{2}{3}(x-2)^{\frac{-1}{3}}$

   $f'(x) > 0$ on $x > 2$, $f'(x) < 0$ on $x < 2$. $f'(2)$ does not exist.

   So $x = 2$ is the only critical point, and the only possible point where $f(x)$ has a local extreme.

   Check the signs of $f'(x)$ on $x > 2$ and $x < 2$. It follows that $f(x)$ indeed has a local min at $x = 2$. Since it is the only local min, it is also the absolute min.

2. Section 4.2, problem 19:

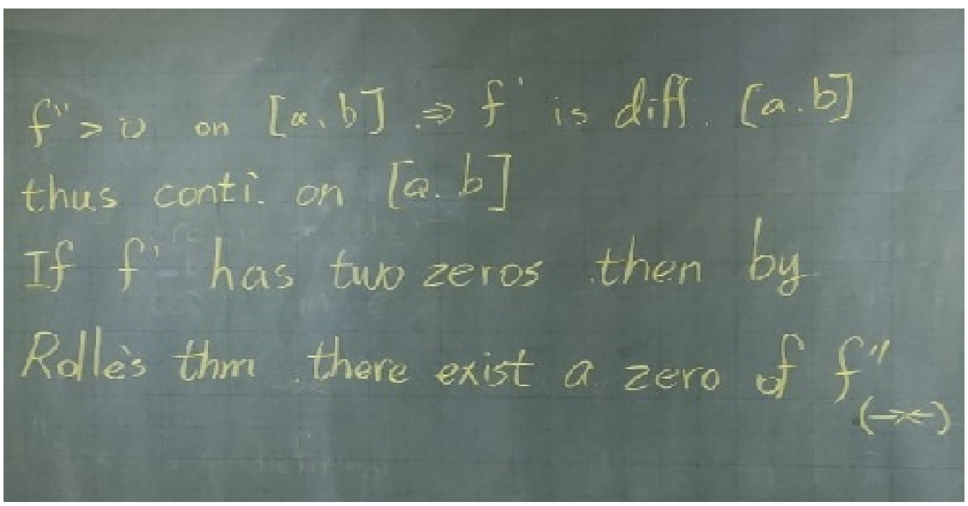

Figure 1: Section 4.3, problem 19

3. Section 4.2, problem 65:

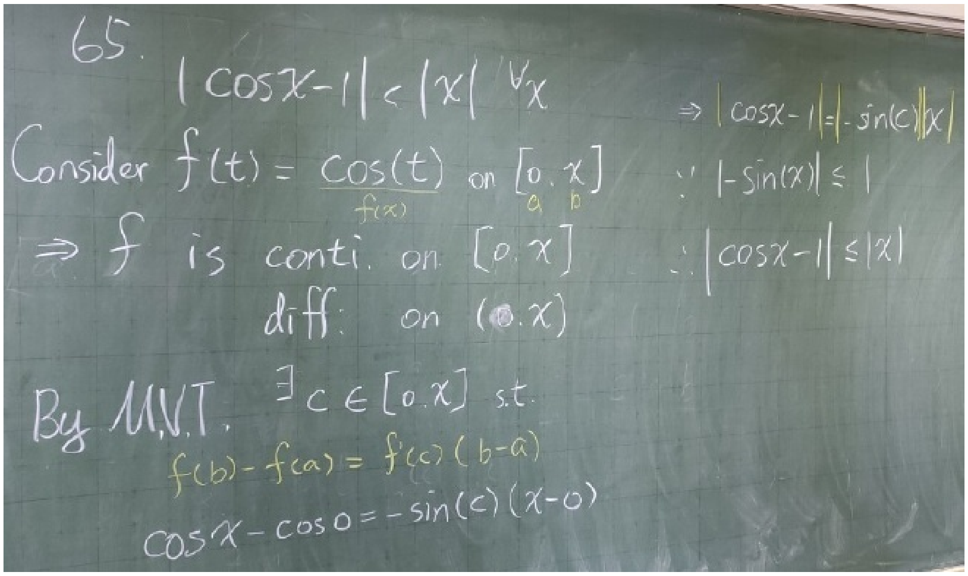

Figure 2: Section 4.2, problem 65

4. Section 4.3, problem 74:

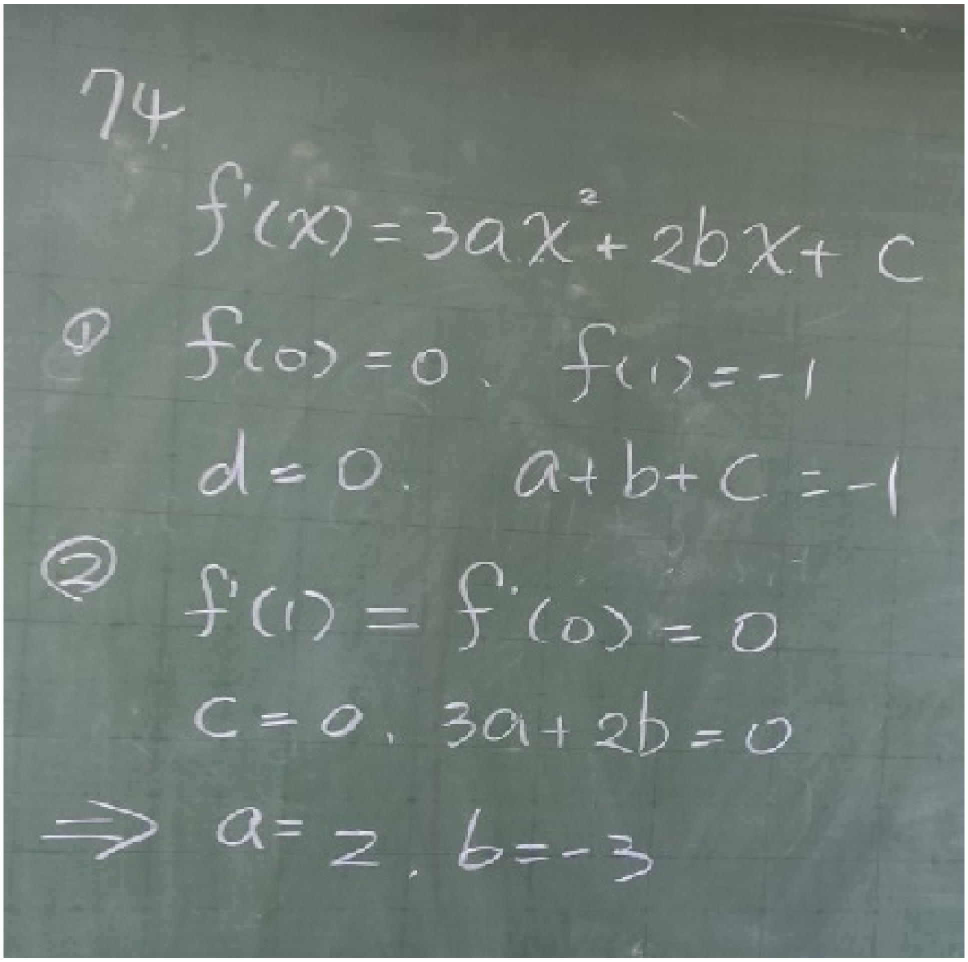

Figure 3: Section 4.3, problem 74

5. Section 4.3, problem 77:

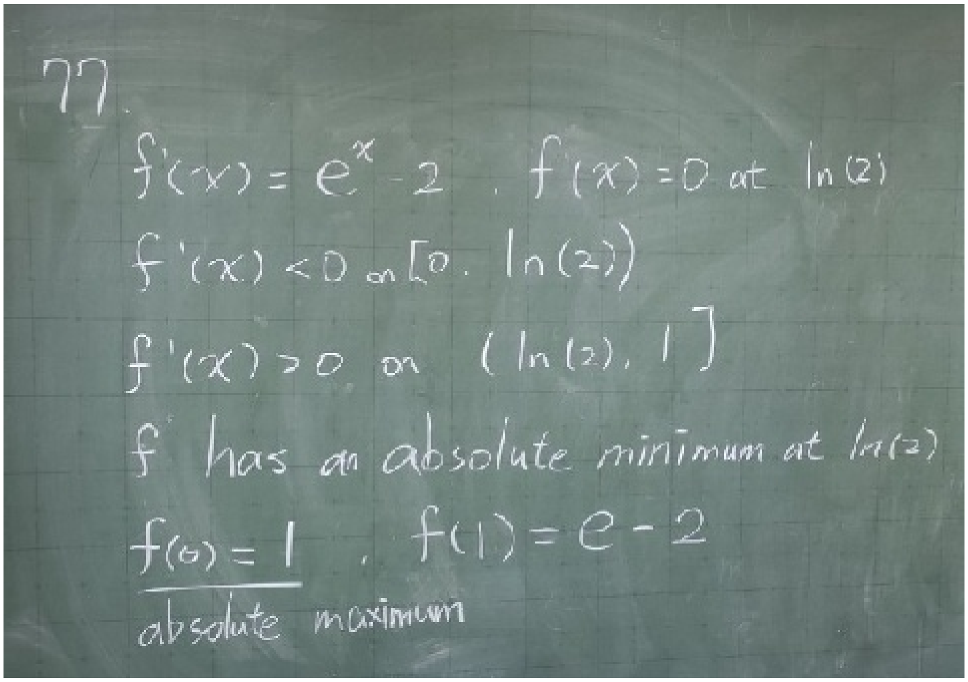

Figure 4: Section 4.3, problem 77