Brief solutions to selected problems in homework 02

1. Section 2.4: Solutions, common mistakes and corrections:

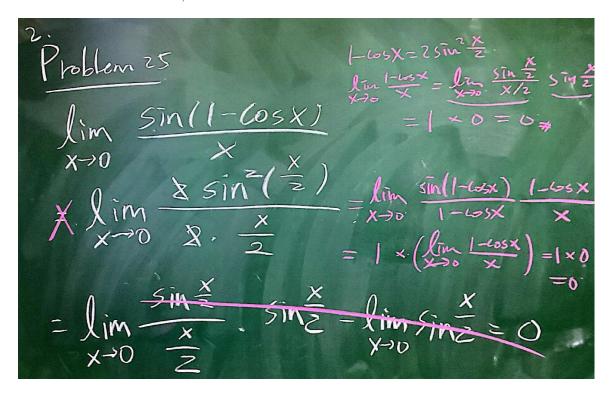


Figure 1: Chapter 2: Additional and advanced Exercise, problem 25

2. Section 2.5: Solutions, common mistakes and corrections:

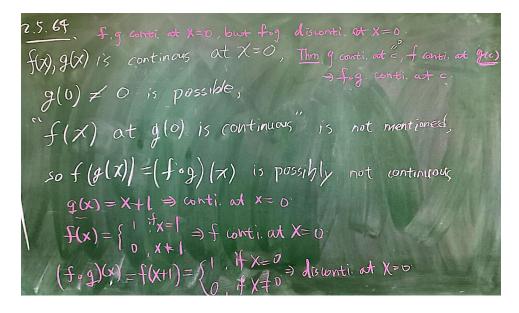


Figure 2: Section 2.5, problem 64. Ans: no. A counter example

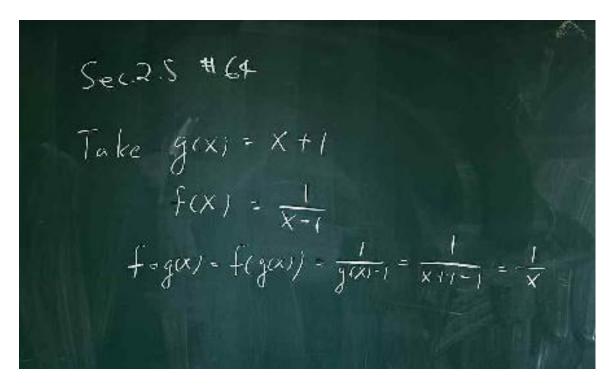


Figure 3: Section 2.5, problem 64. Ans: no. Another counter example

$$2.5.67$$
.

 $g(x)=f(x)-2$
 g

Figure 4: Section 2.5, problem 67

Figure 5: Solution to Section 2.5, problem 68

Suppose
$$f(c) > 0$$
, by continuity, for any ε there exists a such that $0 < |X-c| < \delta \Rightarrow |f(x)-f(c)| < \varepsilon$

Cx $|X-c| < \delta \Rightarrow |f(x)-f(c)| < \varepsilon$

Take $\varepsilon = \frac{f(c)}{2} \Rightarrow |f(x)| < \frac{3}{2}f(c)$ if $0 < |X-c| < \delta$

If $f(x)$ have the same sign as $f(c)$ from $f(c)$ there exists a suppose $f(c)$ if $f(c)$

Figure 6: Common mistakes to Section 2.5, problem 68