Bilkent University

Name: ................................

Department: .....................          Student ID: ...............................

**Q-1)** Let $f(x) = \begin{cases} \sin\frac{1}{x} & x < 0 \\ 0 & x = 0 \\ x\sin\frac{1}{x} & 0 < x < 1 \\ \lfloor x \rfloor + \lfloor -x \rfloor & 1 \leq x < 2 \\ x^2 & 2 \leq x < 3 \\ 10 & x = 3 \\ 5x - 6 & x > 3 \end{cases}$

Fill in the following boxes if the required number exists; otherwise put a cross in the box.

$\lim\limits_{x \to 0^-} f(x) = \boxed{\times}$   $\lim\limits_{x \to 0^+} f(x) = \boxed{0}$   $\lim\limits_{x \to 0} f(x) = \boxed{\times}$   $\lim\limits_{x \to 1} f(x) = \boxed{\times}$

$\lim\limits_{x \to 2^-} f(x) = \boxed{-1}$   $\lim\limits_{x \to 2^+} f(x) = \boxed{4}$   $\lim\limits_{x \to 2} f(x) = \boxed{\times}$   $\lim\limits_{x \to 3^-} f(x) = \boxed{9}$

$\lim\limits_{x \to 3^+} f(x) = \boxed{9}$   $\lim\limits_{x \to 3} f(x) = \boxed{9}$