

1. Suppose that  $\lim_{x \rightarrow 0^+} f(x) = A$ ,  $\lim_{x \rightarrow 0^-} f(x) = B$ ,  $f(0) = C$ , where  $A, B, C$  are distinct real numbers.

In each of the following, fill in the corresponding box by:

- Expressing the limit in terms of  $A, B, C$  if it is possible to do so using the given information;
- Writing DNE if it is possible to conclude that the limit does not exist using the given information;  
or
- Putting a **X**, otherwise.

No explanation is required. No partial points will be given. [The box should contain nothing except your answer!]

a.  $\lim_{x \rightarrow 0^+} f(x - \sqrt{x}) =$  B

b.  $\lim_{x \rightarrow 0^+} f(x \sin^2(1/x)) =$  DNE

c.  $\lim_{x \rightarrow 0^+} f(x - x^2 \sin(1/x)) =$  A

d.  $\lim_{x \rightarrow 0^+} f(x - \sin(x)) =$  A

e.  $\lim_{x \rightarrow 0^+} f(x - \tan(x)) =$  B