$0 < |x - 0| < \delta \implies |f(x) - f(0)| < \epsilon.$ 

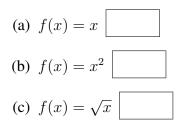
To prove the right-continuity statement requires a definition of  $\delta$  in terms of  $\epsilon$  such that

$$0 < x - 0 < \delta \implies |f(x) - f(0)| < \epsilon.$$

For each function in the list below, enter the number (1,2, or 3) of one of these choices

(1) 
$$\delta = \epsilon^2$$
; (2)  $\delta = \epsilon$ ; (3)  $\delta = \sqrt{\epsilon}$ 

so that your choices establish continuity of the first two functions, and right-continuity of the third function, at x = 0. [You may use each choice only once.]



In this problem we consider three functions f. The first two are continuous at x = 0, i.e.,  $\lim_{x\to 0} f(x) = f(0)$ . The third function is continuous from the right at x = 0, i.e.,  $\lim_{x\to 0^+} f(x) = f(0)$ . In order to use the  $\epsilon$ - $\delta$  definition to prove the continuity statements, one must give a definition of  $\delta$  in terms of  $\epsilon$  such that

 $0 < |x - 0| < \delta \implies |f(x) - f(0)| < \epsilon.$ 

To prove the right-continuity statement requires a definition of  $\delta$  in terms of  $\epsilon$  such that

$$0 < x - 0 < \delta \implies |f(x) - f(0)| < \epsilon.$$

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(1) 
$$\delta = \epsilon^2$$
; (2)  $\delta = \epsilon$ ; (3)  $\delta = \sqrt{\epsilon}$ 

so that your choices establish continuity of the first two functions, and right-continuity of the third function, at x = 0. [You may use each choice only once.]

(a) 
$$f(x) = x$$
 (2)  
(b)  $f(x) = x^2$  (3)  
(c)  $f(x) = \sqrt{x}$  (1)