## 3. Function Properties

Homework0 due Feb 8, 2023 08:59 -03 Completed

# Asymptotics and Trends

3.5/4.0 points (graded)

For each of the following functions $f(x)$ below :

- Find its limits $\lim_{x \to \pm\infty} f(x)$ as $x$ approachs $\pm\infty$.
- Choose the values of $x$ where $f(x)$ is differentiable, i.e. $f'(x)$ exists
- Choose the values of $x$ where $f(x)$ is also strictly increasing, i.e. $f'(x) > 0$.

1. For $f(x) = \max(0, x)$:

   (Recall the function $\max(0, x)$ is the function that outputs the maximum value each $x$.)

   (If the limit diverges to infty, enter **inf** for $\infty$, and **-inf** for $-\infty$ )

   $\lim_{x \to -\infty} f(x) =$ 0 ✔

   $0$

   $\lim_{x \to +\infty} f(x) =$ inf ✔

   $inf$

   Choose the intervals of $x$ where

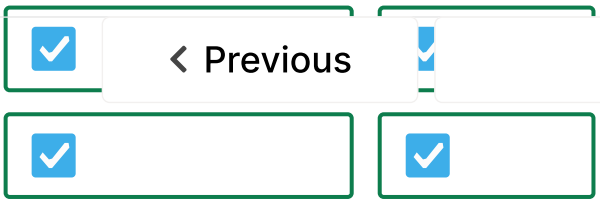
   $f(x)$ differentiable: $f'(x) > 0$ :

   (Choose all that apply.)

   | | |
   |---|---|
   | ☑ $x < 0$ | ☐ $x < 0$ |
   | ☑ $x = 0$ | ☐ $x = 0$ |
   | ☑ $x > 0$ | ☑ $x > 0$ |
   | ✖ | ✔ |

   (Graph this function on a piece of paper!)

(Choose all that apply.)



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