

## Absolute Value

$$\textcircled{1} f(x) = \begin{cases} 2x-1 & x \geq \frac{1}{2} \\ -(2x-1) & x < \frac{1}{2} \end{cases} \quad f'(x) = \begin{cases} 2 & x > \frac{1}{2} \\ \text{DNE} & x = \frac{1}{2} \\ -2 & x < \frac{1}{2} \end{cases}$$

$$\textcircled{2} f(x) = \begin{cases} (x+3)+5 & x \geq -3 \\ -(x+3)+5 & x < -3 \end{cases} \quad f'(x) = \begin{cases} 1 & x > -3 \\ \text{DNE} & x = -3 \\ -1 & x < -3 \end{cases}$$

$$f'(4) = 1 \quad f'(-3) = \text{DNE} \quad f'(-10) = -1$$

$$\textcircled{3} f(x) = \begin{cases} 4x+3 & x \geq -\frac{3}{4} \\ -(4x+3) & x < -\frac{3}{4} \end{cases} \quad f'(x) = \begin{cases} 4 & x > -\frac{3}{4} \\ \text{DNE} & x = -\frac{3}{4} \\ -4 & x < -\frac{3}{4} \end{cases}$$