

⑦  $f(x) = \begin{cases} 2x-1, & x > 2 \\ x+a, & x \leq 2 \end{cases}$        $a = ?$  if continuous

$f(2) = 2(2) - 1 = 3$        $f(2) = 2+a$        $2+a = 3$        $a = 1$

⑧  $f(x) = \sqrt{x-3}$       What interval(s) continuous?

$x-3 \geq 0$        $x \geq 3$

$[3, \infty)$

⑨  $\lim_{x \rightarrow 0} \frac{x}{\sin(3x)}$

$\lim_{x \rightarrow 0} \frac{x}{\sin(3x)} \cdot \frac{3}{3} \rightarrow \lim_{x \rightarrow 0} \frac{1}{3} \left( \frac{3x}{\sin(3x)} \right) = \frac{1}{3} (1) = \frac{1}{3}$

⑩  $\lim_{x \rightarrow 2} f(x)$  ;  $f(x) = \begin{cases} 3x-2, & x \leq 2 \\ x+1, & x > 2 \end{cases}$

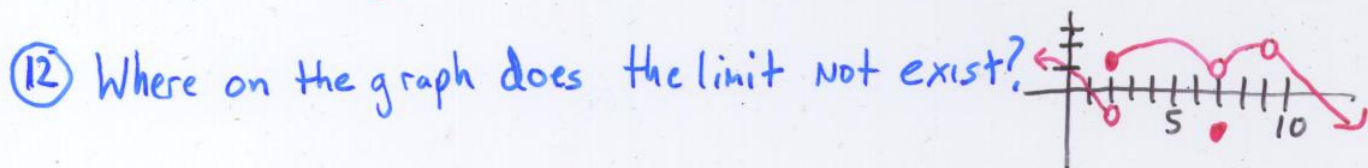
$\lim_{x \rightarrow 2^-} 3(2) - 2 = 4$

$\lim_{x \rightarrow 2^+} 2+1 = 3$

DNE       $4 \neq 3$

⑪  $\lim_{x \rightarrow \pi} \cot \frac{x}{3}$

$\frac{\cos \frac{\pi}{3}}{\sin \frac{\pi}{3}} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$



$x=2$  does not have a limit

$\lim_{x \rightarrow 7} f(x) = 1$        $\lim_{x \rightarrow 9} f(x) = 2$