

IB Math HL1: Limit Warm up

1. Evaluate the followings using the fig. 10

- a.  $\lim_{x \rightarrow 1} f(x) = 2$
- b.  $\lim_{x \rightarrow 2} f(x) = 1$
- c.  $f(2) = 2$
- d.  $\lim_{x \rightarrow 3^-} f(x) = -1$
- e.  $\lim_{x \rightarrow 3} f(x) = \text{DNE}$
- f.  $\lim_{x \rightarrow 4} f(x) = 1$
- g.  $f(4) = \text{undefined}$ .

2. Evaluate  $\lim_{x \rightarrow 2} f(x)$ , where  $f(x) = \begin{cases} 3-2x & \text{if } x \leq 2 \\ x^2-5 & \text{if } x > 2 \end{cases}$

$$\lim_{x \rightarrow 2^+} x^2 - 5 = -1, \quad \lim_{x \rightarrow 2^-} 3 - 2x = -1 \Rightarrow \therefore \boxed{\lim_{x \rightarrow 2} f(x) = -1}$$

one-sided limit

• Right-Hand-limit

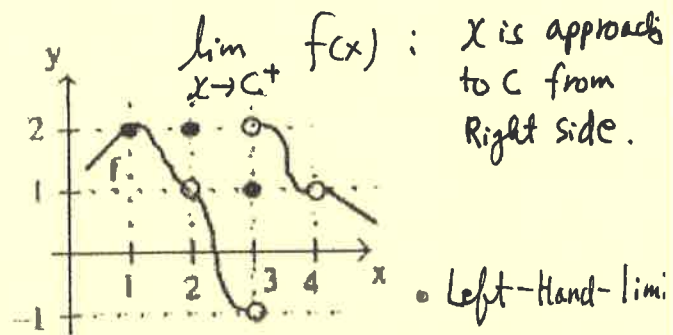


Fig. 10

$\lim_{x \rightarrow c^+} f(x)$ :  $x$  is approaching to  $c$  from Right side.

• Left-Hand-limit

$\lim_{x \rightarrow c^-} f(x)$ :  $x$  is approaching to  $c$  from left side.