

$$(a) \lim_{x \rightarrow -2^-} f(x) = 1, \lim_{x \rightarrow -2^+} f(x) = 3, f(-2) = 4$$

$$\therefore \lim_{x \rightarrow -2^-} f(x) \neq \lim_{x \rightarrow -2^+} f(x) \neq f(-2) \quad \therefore \lim_{x \rightarrow -2} f(x) \text{ 不存在.}$$

$$\lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^+} f(x) = f(0), \text{ 在 } x=0 \text{ 处函数连续 } \therefore \lim_{x \rightarrow 0} f(x) \text{ 存在}$$

$$\lim_{x \rightarrow 1^-} f(x) = 5, \lim_{x \rightarrow 1^+} f(x) = 5, f(1) = 2$$

$$\therefore \lim_{x \rightarrow 1^-} f(x) = \lim_{x \rightarrow 1^+} f(x) \neq f(1) \quad \therefore \lim_{x \rightarrow 1} f(x) \text{ 不存在.}$$

$$(b) \lim_{x \rightarrow -2} f(x) \text{ 不存在, } f(-2) = 4 \quad \therefore \lim_{x \rightarrow -2} f(x) = f(x) \text{ 错误.}$$

$$\lim_{x \rightarrow 0} f(x) = f(0) \text{ 正确.}$$

$$\lim_{x \rightarrow 1} f(x) = 5, f(1) = 2 \quad \therefore \lim_{x \rightarrow 1} f(x) = f(1) \text{ 错误.}$$

$$(c) \lim_{x \rightarrow -2^+} f(x) = 3, f(-2) = 4. \quad \therefore \lim_{x \rightarrow -2^+} f(x) = f(-2) \text{ 错误.}$$

$$\lim_{x \rightarrow 0^+} f(x) = f(0) \text{ 正确}$$

$$\lim_{x \rightarrow 1^+} f(x) = 5, f(1) = 2 \quad \therefore \lim_{x \rightarrow 1^+} f(x) = f(1) \text{ 错误.}$$

$$(d) \lim_{x \rightarrow -2^+} f(x) = 3.$$

在 $-2 < x < 1$ 范围内, 设 $f(x) = kx + b$. 将点 $(-2, 3)$, 点 $(1, 5)$ 构

成方程组

$$\begin{cases} 3 = -2k + b \\ 5 = k + b \end{cases} \quad \text{解得} \quad \begin{cases} k = \frac{2}{3} \\ b = \frac{13}{3} \end{cases} \quad \therefore f(x) = \frac{2}{3}x + \frac{13}{3} \quad -2 < x < 1.$$

$\therefore$ 在 $x=0$ 点处连续, $\therefore$

$$\therefore \lim_{x \rightarrow 0^+} f(x) = f(0) = \frac{2}{3} \times 0 + \frac{13}{3} = \frac{13}{3}.$$

$$\lim_{x \rightarrow 1^+} f(x) = 5.$$