

IV. Graphing

1. Let f be defined by

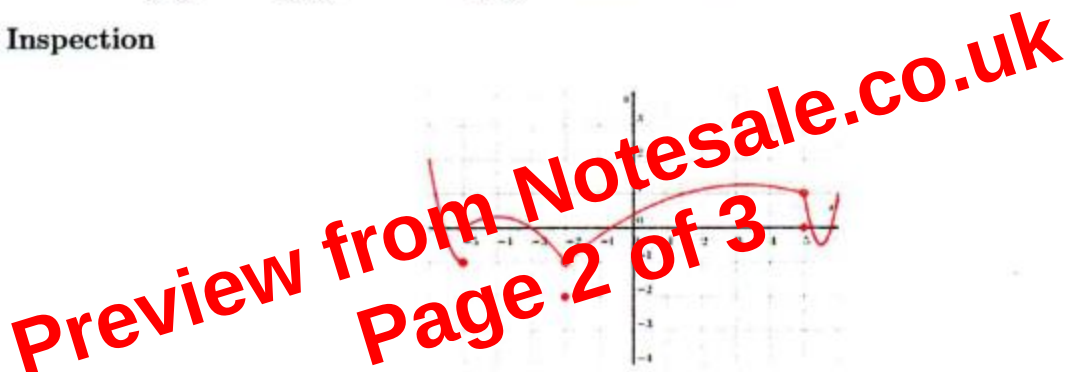
$$f(x) = \begin{cases} x^2 & \text{if } x < -1 \\ x & \text{if } -1 \leq x < 1 \\ 1 - x & \text{if } x \geq 1 \end{cases}$$

- Sketch the graph of f .
 - Determine at point/s at which f is discontinuous and justify your answer/s.
 - What kind of discontinuity occurs in your answer in part b? Justify your answer.
2. Let f be a function defined by

$$f(x) = \begin{cases} x^2 - 4 & \text{if } x < 2 \\ 4 & \text{if } x = 2 \\ 4 - x^2 & \text{if } x \geq 2 \end{cases}$$

- Sketch the graph of the function.
- Find $\lim_{x \rightarrow 2^+} f(x)$, $\lim_{x \rightarrow 2^-} f(x)$, and $\lim_{x \rightarrow 2} f(x)$ if they exist.

V. Inspection



Given above is the graph of f . Determine the following limits.

- | | |
|-------------------------------------|-----------------------------------|
| a) $\lim_{x \rightarrow -2^-} f(x)$ | d) $\lim_{x \rightarrow -5} f(x)$ |
| b) $\lim_{x \rightarrow -2^+} f(x)$ | e) $\lim_{x \rightarrow 5} f(x)$ |
| c) $\lim_{x \rightarrow -2} f(x)$ | |