

1.4 Estimating Limit Values from Tables

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS table 表格 • limit 极限 • right-hand limit 右极限 • approaches 趋近

Objective

Build the skills to answer exam questions on **estimating limit values from tables**.

You must be able to:

- use a **table** 表格 of values approaching a to estimate a limit
- check the trend from both sides

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Limits from tables

Tabulate $f(x)$ for x close to a on **both sides**. If the values settle toward one number, that is the estimated limit.

■ Example

$f(1.9) = 3.8$, $f(1.99) = 3.98$, $f(2.01) = 4.02$: the values approach 4, so $\lim_{x \rightarrow 2} f(x) \approx 4$.

2 Practice

2.1 State how a table is used to estimate a limit. [1]

2.2 From $f(1.9) = 3.8$, $f(1.99) = 3.98$, $f(2.01) = 4.02$, estimate $\lim_{x \rightarrow 2} f(x)$. [2]

2.3 State why you check both sides of a . [1]

3 Exam-style questions

3.1 To estimate a limit from a table, pick x -values [1]

- | | |
|---|---|
| A | B |
| C | D |
- A far from a
B approaching a from both sides
C only greater than a
D equal to a

3.2 If $f(x)$ approaches 7 from both sides, the limit is [1]

- | | |
|---|---|
| A | B |
| C | D |
- A 0
B 7
C undefined
D 14

3.3 Table: $f(2.9) = 5.9$, $f(2.99) = 5.99$, $f(3.01) = 6.01$.

- (a) State the left-hand trend. [1]
(b) State the right-hand trend. [1]
(c) State $\lim_{x \rightarrow 3} f(x)$. [1]