

**Question 6**

Near  $(2, 3)$ , the columns give  $x$  and the rows give  $y$ :

|     | 1.9  | 2.0  | 2.1  |
|-----|------|------|------|
| 2.9 | 7.62 | 7.80 | 7.98 |
| 3.0 | 7.71 | 7.90 | 8.09 |
| 3.1 | 7.80 | 8.00 | 8.20 |

**Tasks**

1. Estimate  $f_x(2, 3)$  centrally.
2. Estimate  $f_y(2, 3)$  centrally.
3. Interpret both.

**Question 6 – Solution**

**Strategy.** Use the center row and column.

**Step 1:  $x$  rate**  $f_x \approx (8.09 - 7.71)/.2 = \boxed{1.90}$ .

**Step 2:  $y$  rate**  $f_y \approx (8.00 - 7.80)/.2 = \boxed{1.00}$ .

**Step 3: Meaning** Output rises about 1.90 per  $x$  unit with  $y$  fixed and 1.00 per  $y$  unit with  $x$  fixed. Symmetric differences reduce one-sided bias.