

11.5 Finding formulas from a table (Notes)

Step 1: Rewrite as a sequence

Think of the y-coordinates of the Table as the numbers for your sequence, starting with the y-coordinate for when x is 1 and so on, then rewrite the numbers as a sequence of numbers.

Step two:

Follow steps learned in past lessons to write formulas.

1)

| x | y |
|----------|----------|
| 1 | 2 |
| 2 | 7 |
| 3 | 12 |
| 4 | 17 |
| 5 | 22 |

Rewrite: 2, 7, 12, 17, 22

Common Difference/Ratio:

$$D = 7$$

Recursive Formula:

$$a_1 = 2$$

$$a_{n+1} = a_n + 7$$

Explicit Formula:

$$a_n = -5 + 7n$$

| | Explicit | Recursive |
|------------|---|---------------------------------|
| Arithmetic | $a_n = a_0 + dn$ <p style="font-size: small; margin-top: 5px;"> $a_n = \text{any term}$ $a_0 = \text{term zero}$ $d = \text{common difference}$ </p> | $a_1 =$ $a_{n+1} = a_n + d$ |
| Geometric | $g_n = g_0 \cdot (r)^n$ <p style="font-size: small; margin-top: 5px;">$r = \text{common ratio}$</p> | $g_1 =$ $g_{n+1} = g_n \cdot r$ |