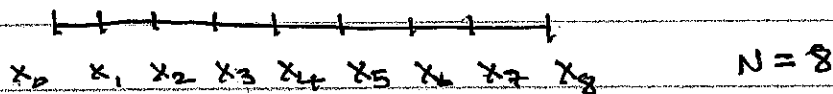


5.1 Partitions

A partition is a set of x values, evenly spaced, on an interval $[a, b]$. The first is labeled x_0 and the last is labeled x_N (or x_n). These points break the interval into N equal subintervals



The width of each subinterval is denoted h or Δx

$$h = \frac{b-a}{N} \quad \frac{\text{total width}}{\text{number of subintervals}}$$

Ex 1 $[-2, 5]$ $N=14$

First, the width is $h = \frac{5 - (-2)}{14} = \frac{1}{2}$

so the partition is

$$\left\{ -2, -1.5, -1, -.5, 0, .5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 \right\}$$

$x_0 \quad x_1 \quad x_2 \quad x_3 \quad x_4 \quad x_5 \quad x_6 \quad x_7 \quad x_8 \quad x_9 \quad x_{10} \quad x_{11} \quad x_{12} \quad x_{13} \quad x_{14}$

Ex 2 $[3, 9]$ $N=5$

$$h = \frac{9-3}{5} = \frac{6}{5}$$

Since this is a fraction, it's handy to convert to fifths:

$$x_0 = 3 = \frac{15}{5} \quad \text{Add } \frac{6}{5} : \quad x_1 = \frac{21}{5}$$

again

$$x_2 = \frac{27}{5}$$

$$x_3 = \frac{33}{5}$$

$$x_4 = \frac{39}{5}$$

$$x_5 = \frac{45}{5}$$

Partitions 2

You can also use decimals : $h = 1.2$

$$x_0 = 3$$

$$x_1 = 4.2$$

$$x_2 = 5.4$$

$$x_3 = 6.6$$

$$x_4 = 7.8$$

$$x_5 = 9$$