

### Euclidean Distance

$$\text{SQRT}((5-10)^2 + \dots (7-4)^2)$$

| Tuple i    | Tuple j | $(x_i - x_j)^2$ |
|------------|---------|-----------------|
| 5          | 10      | 25              |
| 1          | 0       | 1               |
| 22         | 20      | 4               |
| 7          | 4       | 9               |
| SUM =      |         | 39              |
| SQRT(SUM)= |         | 6.244998        |

### Manhattan Distance

$$\text{ABS}(5-10) + \dots + \text{ABS}(7-4)$$

| Tuple i    | Tuple j | $\text{ABS}(x_i - x_j)$ |
|------------|---------|-------------------------|
| 5          | 10      | 5                       |
| 1          | 0       | 1                       |
| 22         | 20      | 2                       |
| 7          | 4       | 3                       |
| SUM =      |         | 11                      |
| DISTANCE = |         | 11                      |

### Minkowski Distance

$$\text{Using } h=3, \text{ The } h\text{-root of } (\text{ABS}(5-10)^h + \dots \text{ABS}(7-4)^h)$$

| Tuple i | Tuple j | $\text{ABS}(x_i - x_j)^3$ |
|---------|---------|---------------------------|
| 5       | 10      | 125                       |
| 1       | 0       | 1                         |
| 22      | 20      | 8                         |
| 7       | 4       | 27                        |
| SUM =   |         | 161                       |
| H-ROOT= |         | 6.244998                  |

### Supremum Distance

The maximum distance for one of the attributes

| Tuple i | Tuple j | $\text{ABS}(x_i - x_j)$ |
|---------|---------|-------------------------|
| 5       | 10      | 5                       |
| 1       | 0       | 1                       |
| 22      | 20      | 2                       |
| 7       | 4       | 3                       |
| MAX =   |         | 5                       |