**FUNCTIONS**

A function connects two sets together, the input set and the output set. It is just an instruction on what you need to do to the input set to get the output set.

Ex.

Input set: all odd numbers starting from 1 to 11

Instruction (function): add 1 to each input

Output set: all even numbers starting from 2 to 12.

We can model this using a function table:

|  |  |
| --- | --- |
| function: f(x) = x + 1 | |
| Input set | Output set |
| 1 | 2 |
| 3 | 4 |
| 5 | 6 |
| 7 | 8 |
| 9 | 10 |
| 11 | 12 |

The input set is called the ­domain and the output set is called the range.

Ex.

Given the input set x = {0, 1, 2, 3, 4}

Instruction: add 1 to each input set then double the sum.

y = 2(x+1)

f(x) = 2(x+1)

Output set: y = {2, 4, 6, 8, 10}

We can model this using a function table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 0 | 1 | 2 | 3 | 4 |
| y | 2 | 4 | 6 | 8 | 10 |

Ex.

Using the input set as x = (-∞, ∞)

this means all the possible real numbers are included.

Instruction (function): x2  + 4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | -2 | -1 | 0 | 1 | 2 |
| y | 8 | 5 | 4 | 5 | 8 |

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Ex. (Which graphs are not functions?)

y =

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | -1 | 0 | 1 | 4 | 9 |
| y | no value | 0 | 1 | 2 | 3 |

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How do you determine the domain and range?

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How to know the domain values?

Draw the graph of the function but only with the x-axis. All of the values the graph cover is the domain.

How to know the range values?

Draw the graph but only with the y axis.

Ex.

What is the domain and the range of this function?

f(x) = | x + 1 |

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EXERCISE:

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