**QUADRATIC FUNCTIONS**

* A function whose highest power is two (2).
* It is written in the form : $y=ax^{2}$
1. The effect of the$a$ in $y=ax^{2}$

Complete the table below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $$x$$ | **-3** | **-2** | **-1** | **0** | **1** | **2** | **3** |
| $$y=x^{2}$$ | 9 | 4 | 1 | 0 | 1 | 4 | 9 |
| $$y=½x^{2}$$ | 4,5 | 2 | 0,5 | 0 | 0,5 | 2 | 4,5 |
| $$y=2x^{2}$$ | 18 | 4 | 2 | 0 | 2 | 4 | 18 |
| $$y=-x^{2}$$ |  |  |  |  |  |  |  |
| $$y=-½x^{2}$$ |  |  |  |  |  |  |  |
| $$y=-2x^{2}$$ |  |  |  |  |  |  |  |

**EXERCISE**

1. Copy and complete the table above.
2. Using different colours plot the six(6) functions on the Cartesian plane like the one below:
3. What do you notice?



The effect of the$q$in $y=ax^{2}+q$

Complete the table below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $$x$$ | **-3** | **-2** | **-1** | **0** | **1** | **2** | **3** |
| $y=x^{2}+$2 | 11 | 6 | 3 | 2 | 3 | 6 | 11 |
| $$y=x^{2}-2$$ | 7 | 2 | -1 | -2 | -1 | 2 | 7 |
| $$y=x^{2}$$ | 9 | 4 | 1 | 0 | 1 | 4 | 9 |
| $$y=-x^{2}+2$$ |  |  |  |  |  |  |  |
| $$y=-x^{2}-2$$ |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**EXERCISE**

1. Copy and complete the table above.
2. Using different colours plot the six(6) functions on the Cartesian plane like the one below:
3. What do you notice?

