9/25/18

Transformations of $y = x^2$

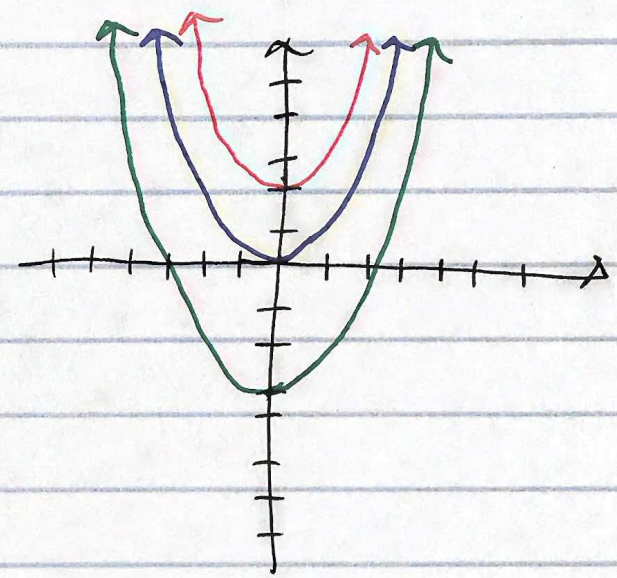
Essential ?: What happens to the graph of $y = x^2$ when the function is changed by adding, subtracting, or multiplying by a constant?

Vocab.: transformation – a shift, reflection, rotation, shrink, or stretch of a figure.

parent function – an original function without any transformations Ex $y = x^2$ (parent quad)

parabola – the graph of a quadratic function.

	y_1	y_2	y_3
x	x^2	x^2+2	x^2-3
-3	9	11	6
-2	4	6	1
-1	1	3	-2
0	0	2	-3
1	1	3	-2
2	4	6	1
3	9	11	6



Summary:

$y = x^2 + k$ Shifts the parabola up k units

$y = x^2 - k$ Shifts the parabola down k units

$y = (x-h)^2$ shifts the parabola right h units

$y = (x+h)^2$ shifts the parabola left h units.

$y = -x^2$ reflects the parabola over the x-axis (vertically)

$y = ax^2$ for $0 < |a| < 1$, vertical compression/shrink, makes graph wider

for $|a| > 1$, vertical stretch, makes graph more narrow/thinner