Symmetries of Functions

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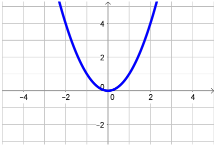

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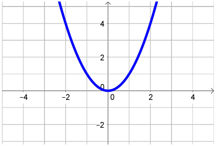
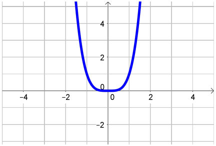
We saw that the squaring function $f(x) = x^2$ is symmetric across the $y-$axis.

Graphing $f(x) = x^4$ we see that it is symmetric, also.





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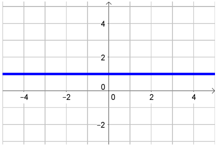
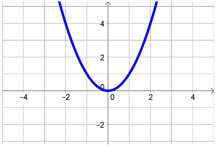
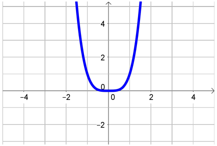
We saw that the ▸ squaring function $f(x) = x^2$ is symmetric across the $y-$axis.

Graphing $f(x) = x^4$ we see that it is symmetric, also.

The graph of $f(x) = x^0 = 1$ is also symmetric across the $y-$axis







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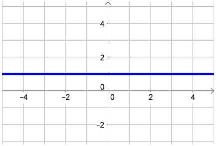

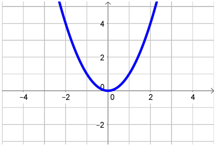

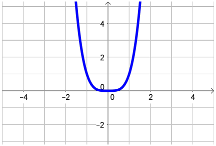

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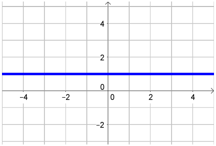

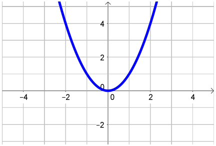

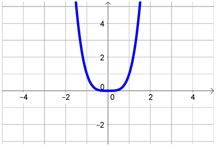

Any function with an even exponent of the form: $f(x) = x^{2n}$ is symmetric across the $y-$axis

Definition: A function whose graph is symmetric across the $y-$axis is called an *even function*.

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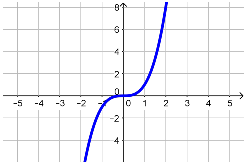

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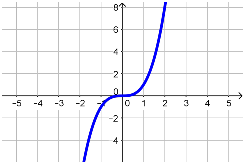
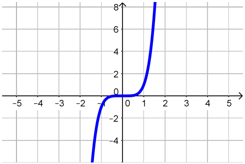
Graphing $f(x) = x^5$ we see that it is, also.





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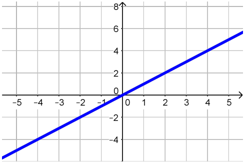
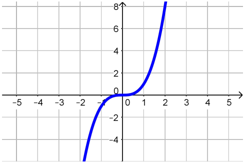
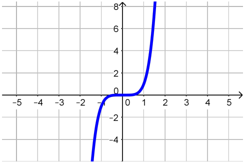
The graph of $f(x) = x^1 = x$ is also rotationally symmetric







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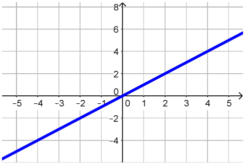

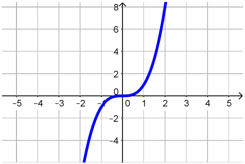

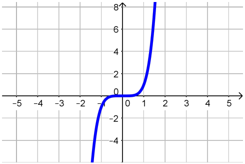

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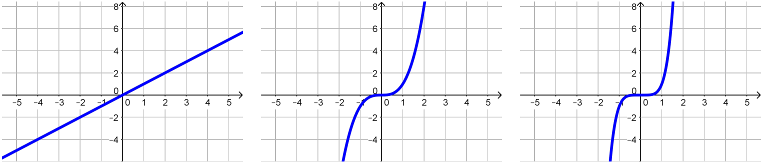

Any function with an odd exponent of the form: $f(x) = x^{2n+1}$ is rotationally symmetric around the origin

Definition: A function whose graph is rotationally symmetric around the origin is called an *odd function*.