1.5 Graphical Transformations

Target 1E: Rigid and non-rigid transformations of quadratic, cubic, square root, and absolute value functions

In your TI-Nspire, open the file: 1.5.1 Precalc Transformation Sliders
Change the sliders on each page to fill in the information below.

Vertical/Horizontal Translations

General Form	Translation Direction	Sample Function
$y = f(x) + k$	up k units	$y = x^2 + 3$
$y = f(x) - k$	down k units	$y = \lvert x \rvert - 2$
$y = f(x + h)$	left h units	$y = \sqrt{x+2}$
$y = f(x - h)$	right h units	$y = e^{x-3}$

Vertical/Horizontal Stretches and Shrinks (Dilations)

General Form	Dilation Description	Sample Function
$y = af(x)$	if $a > 1$, vertical stretch by a factor of a	$y = 5\sqrt{x}$
	if $0 < a < 1$, vertical shrink by a factor of a.	$y = \frac{1}{5}\sin x$
$y = f(ax)$	if $0 < a < 1$, horizontal stretch by a factor of $1/a$.	$y = \cos(\frac{1}{2}x)$
	if $a > 1$, horizontal shrink by a factor of $1/a$.	$y = (4x)^3$

Reflections

General Form	Reflection Description	Sample Function
$y = -f(x)$	across the x-axis	$y = -\ln x$
$y = f(-x)$	across the y-axis	$y = e^{-x}$

More Practice

Graphical Transformations

http://www.regentsprep.org/regents/math/algtrig/atp9/funclesson1.htm
https://www.mathsisfun.com/sets/function-transformations.html
https://www.khanacademy.org/math/algebra2/manipulating-functions/stretching-functions/v/shifting-and-reflecting-functions
https://academics.utep.edu/Portals/1788/CALCULUS%20MATERIAL/1_7%20TRANSFORMATION%20OF%20FNS.pdf
https://www.youtube.com/watch?v=0a-AjP4UdnY
https://www.youtube.com/watch?v=3Q5Sy034fok

Homework Assignment

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