







Bouncee maths





Linear

Name	Function	Domain	Graph
EaseIn	$f(x) = x$	$0 \leq x \leq 1$	
EaseSpike	$f(x) = 2x$ $g(x) = 2(1 - x)$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	




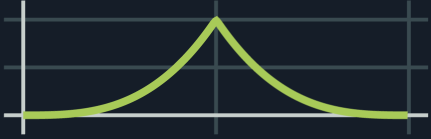
Sinus

Name	Function	Domain	Graph
EaseIn	$f(x) = -\cos(0.5x\pi) + 1$	$0 \leq x \leq 1$	
EaseOut	$f(x) = \sin(0.5x\pi)$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = -0.5\cos(x\pi) + 0.5$	$0 \leq x \leq 1$	
EaseSpike	$f(x) = -\cos(x\pi) + 1$ $g(x) = \cos(x\pi) + 1$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	



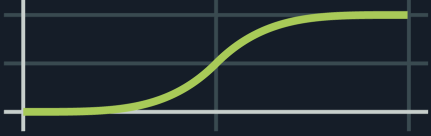

Quadratic

Name	Function	Domain	Graph
EaseIn	$f(x) = x^2$	$0 \leq x \leq 1$	
EaseOut	$f(x) = 1 - (x - 1)^2$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 2x^2$ $g(x) = 1 - 0.5(2x - 2)^2$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 4x^2$ $g(x) = (2x - 2)^2$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	



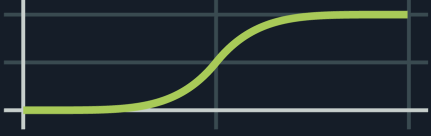

Cubic

Name	Function	Domain	Graph
EaseIn	$f(x) = x^3$	$0 \leq x \leq 1$	
EaseOut	$f(x) = 1 + (x - 1)^3$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 4x^3$ $g(x) = 1 + 4(x - 1)^3$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 8x^3$ $g(x) = -(2x - 2)^3$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	



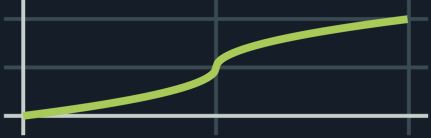

Quartic

Name	Function	Domain	Graph
EaseIn	$f(x) = x^4$	$0 \leq x \leq 1$	
EaseOut	$f(x) = 1 - (x - 1)^4$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 0.5 - 8(x - 0.5)^4$ $g(x) = 0.5 + 8(x - 0.5)^4$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 16x^4$ $g(x) = (2x - 2)^4$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	



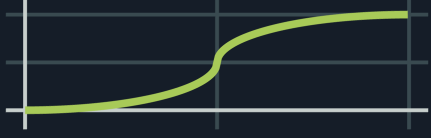
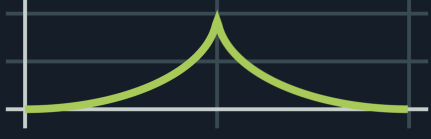
Quintic

Name	Function	Domain	Graph
EaseIn	$f(x) = x^5$	$0 \leq x \leq 1$	
EaseOut	$f(x) = 1 + (x - 1)^5$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 16x^5$ $g(x) = 1 + 16(x - 1)^5$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 32x^5$ $g(x) = -(2x - 2)^5$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	

Exponential

Name	Function	Domain	Graph
EaseIn	$f(x) = 1 - \sqrt{1 - x}$	$0 \leq x \leq 1$	
EaseOut	$f(x) = \sqrt{x}$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 0.5 - 0.5\sqrt{1 - 2x}$ $g(x) = 0.5 + 0.5\sqrt{2x - 1}$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 1 - \sqrt{1 - 2x}$ $g(x) = 1 + \sqrt{2x - 1}$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	




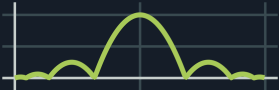
Circular

Name	Function	Domain	Graph
EaseIn	$f(x) = 1 - \sqrt{1 - x^2}$	$0 \leq x \leq 1$	
EaseOut	$f(x) = \sqrt{1 - (x - 1)^2}$	$0 \leq x \leq 1$	
EaseInOut	$f(x) = 0.5 - \sqrt{0.25 - x^2}$ $g(x) = 0.5 + \sqrt{0.25 - (x - 1)^2}$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	
EaseSpike	$f(x) = 1 - \sqrt{1 - 4x^2}$ $g(x) = 1 - \sqrt{2x - 2^2}$	$0 \leq x \leq 0.5$ $0.5 < x \leq 1$	

Bounce

$s = 7.5625$ (scalar that narrows parabola)

$d = 2.75$ (offset on the x axis)

Name	Function	Domain	Graph
EaseIn	$f(x) = 1 - sx^2$	$0 \leq x < \frac{1}{d}$	
	$g(x) = 1 - s(x - \frac{1.5}{d})^2 - 0.75$	$1/d \leq x < \frac{2}{d}$	
	$h(x) = 1 - s(x - \frac{2.25}{d})^2 - 0.9375$	$\frac{2}{d} \leq x < \frac{2.5}{d}$	
	$i(x) = 1 - s(x - \frac{2.625}{d})^2 - 0.984375$	$\frac{2.5}{d} \leq x < 1$	
EaseOut	$f(x) = sx^2$	$0 \leq x < \frac{1}{d}$	
	$g(x) = s(x - \frac{1.5}{d})^2 - 0.75$	$1/d \leq x < \frac{2}{d}$	
	$h(x) = s(x - \frac{2.25}{d})^2 - 0.9375$	$\frac{2}{d} \leq x < \frac{2.5}{d}$	
	$i(x) = s(x - \frac{2.625}{d})^2 - 0.984375$	$\frac{2.5}{d} \leq x < 1$	
EaseInOut		$0 \leq x < 0.5d$	
		$0.5d \leq x < 1/d$	
	$f(x) = sx^2$	$1/d \leq x < d$	
	$g(x) = s(x - 1.5/d)^2 - 0.75$	$d \leq x < 2/d$	
	$h(x) = s(x - 2.25/d)^2 - 0.9375$	$2/d \leq x < 2.5/2d$	
	$i(x) = s(x - 2.625/d)^2 - 0.984375$	$2.5/2d \leq x < 2.5/d$	
		$2.5/d \leq x < 0.5$	
		$0.5 \leq x < 1$	
EaseSpike		$0 \leq x < 0.5d$	
		$0.5d \leq x < 1/d$	
	$f(x) = sx^2$	$1/d \leq x < d$	
	$g(x) = s(x - 1.5/d)^2 - 0.75$	$d \leq x < 2/d$	
	$h(x) = s(x - 2.25/d)^2 - 0.9375$	$2/d \leq x < 2.5/2d$	
	$i(x) = s(x - 2.625/d)^2 - 0.984375$	$2.5/2d \leq x < 2.5/d$	
		$2.5/d \leq x < 0.5$	
		$0.5 \leq x < 1$	

Elastic

Back

Polynomial shaping:

Inverted Cos

Double Cubic

Double Cubic Blend

Double Odd

