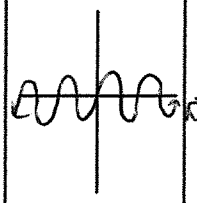
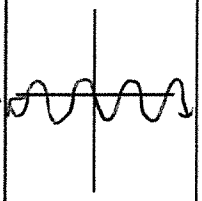
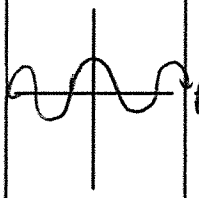
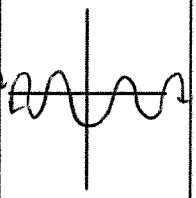
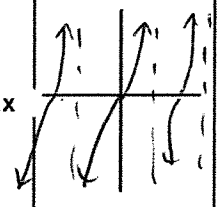
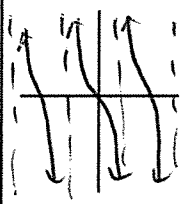
Family	Equation	Positive "a" Sketch	Negative "a" Sketch	Domain	Range	Description a +	Description a -
Sine (Trig)	y = asinx			$(-\infty,\infty)$	$[-a,a]$	Many to 1 , odd ↑ $\left(-\frac{\pi}{2}+2n\pi,\frac{\pi}{2}+2n\pi\right)$ ↓ $\left(\frac{\pi}{2}+2n\pi,\frac{3\pi}{2}+2n\pi\right)$ n is an integer x-int = $(n\pi,0)$ y-int = (0,0) No end behavior	Many to 1 , odd ↑ $\left(\frac{\pi}{2}+2n\pi,\frac{3\pi}{2}+2n\pi\right)$ ↓ $\left(-\frac{\pi}{2}+2n\pi,\frac{\pi}{2}+2n\pi\right)$ n is an integer x-int = $(n\pi,0)$ y-int = (0,0) No end behavior
Cosine (Trig)	y = acosx			$(-\infty,\infty)$	$[-a,a]$	Many to 1, Even ↓ $(2n\pi,\pi+2n\pi)$ ↑ $(\pi+2n\pi,2\pi+2n\pi)$ n is an integer x-int = $\left(\frac{\pi}{2}+n\pi,0\right)$ y-int = (0, a) No end behavior	Many to 1 , Even ↓ $(\pi+2n\pi,2\pi+2n\pi)$ ↑ $(2n\pi,\pi+2n\pi)$ n is an integer x-int = $\left(\frac{\pi}{2}+n\pi,0\right)$ y-int = (0, a) No end behavior

Difference: Sine goes through (0,0)
Cosine does not!

Family	Equation	Positive "a" Sketch	Negative "a" Sketch	Domain	Range	Description a +	Description a -
Tangent	y = atanx			$(-\infty,\infty)$ $x \neq \frac{\pi}{2} + n\pi$ n is an integer	$(-\infty,\infty)$	Many to 1, odd ↑ $(-\infty,\infty)$ $x \neq \frac{\pi}{2} + n\pi$ n is an integer Asym $x = \frac{\pi}{2} + n\pi$ x-int = $(n\pi, 0)$ y-int = (0, 0) No end behavior	Many to 1, odd ↓ $(-\infty,\infty)$ $x \neq \frac{\pi}{2} + n\pi$ n is an integer Asym $x = \frac{\pi}{2} + n\pi$ x-int = $(n\pi, 0)$ y-int = (0, 0) No end behavior
Piecewise	$y = \begin{cases} \\ \\ \end{cases}$						

$$y = \begin{cases} f_1(x) & \text{domain 1} \\ f(x) & \text{domain 2} \\ f_3(x) & \text{domain 3} \\ \text{etc} \end{cases}$$

all this info will depend on what your functions ($f_1(x)$, $f_2(x)$, ...) are, in the equation.