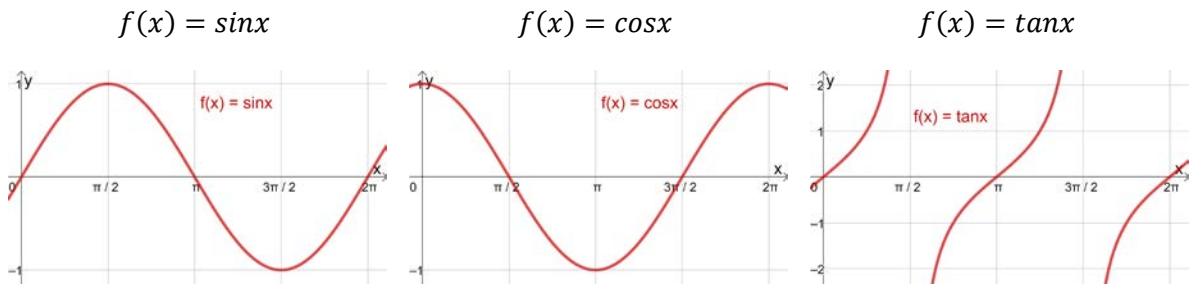


Trigonometric Graphs

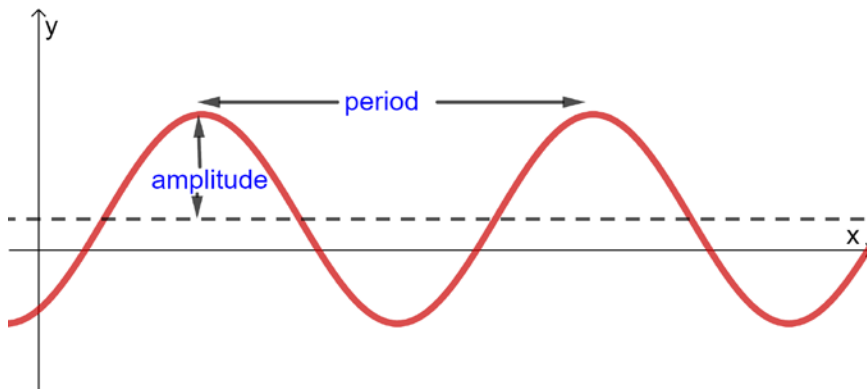
You should be able to reproduce sketches of the three circular functions $\sin x$, $\cos x$ and $\tan x$



Amplitude and Period

The amplitude of a circular function is the height from the centre line to the peak

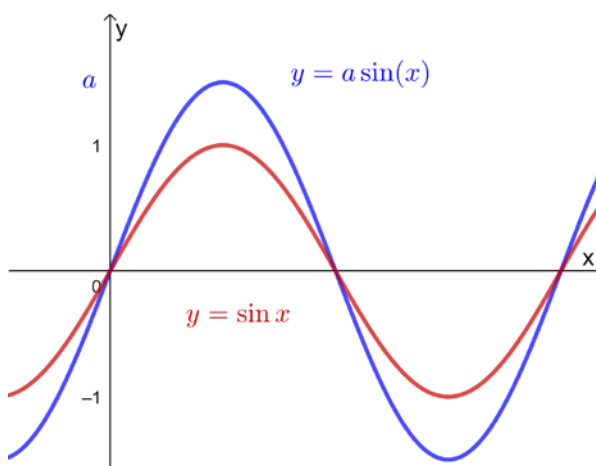
The period of a circular function is the distance from one peak to the next



Transformations

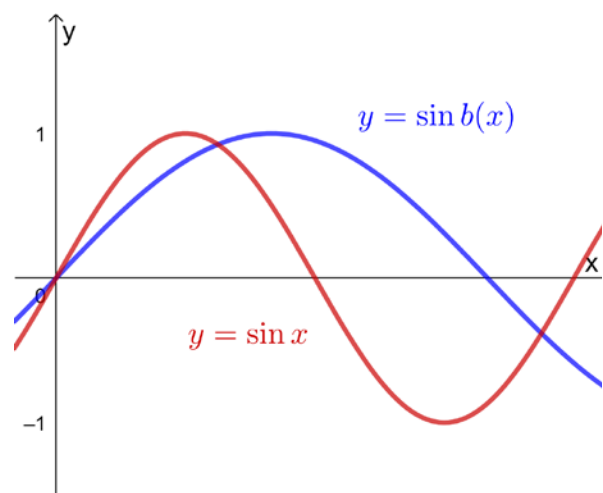
Stretch by scale factor a in the y direction

Amplitude = a

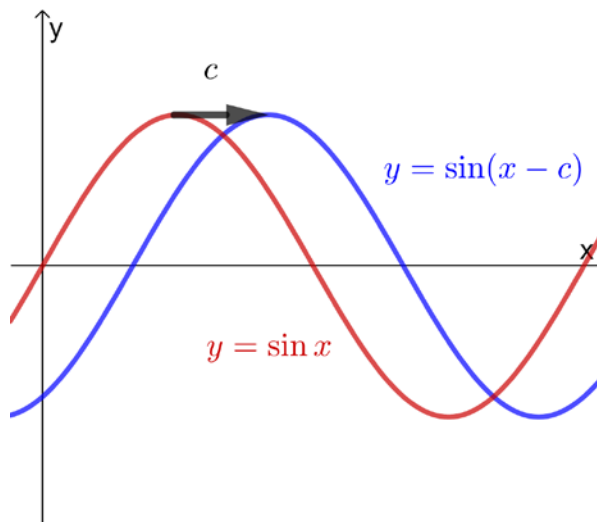


Stretch by scale factor of $\frac{1}{b}$ in the x direction

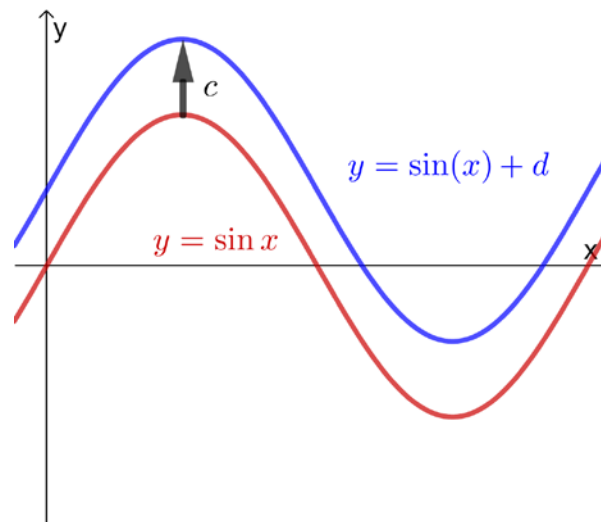
Period = $\frac{2\pi}{b}$



The phase shift is the horizontal translation



The vertical shift is the vertical translation



$$f(x) = a\sin(b(x + c)) + d$$

Starting with the graph of $y = \sin x$

1. Stretch by a factor $\frac{1}{b}$ in the x direction
2. Translate c units to the left
3. Stretch by a factor a in the y direction
4. Translate d units up