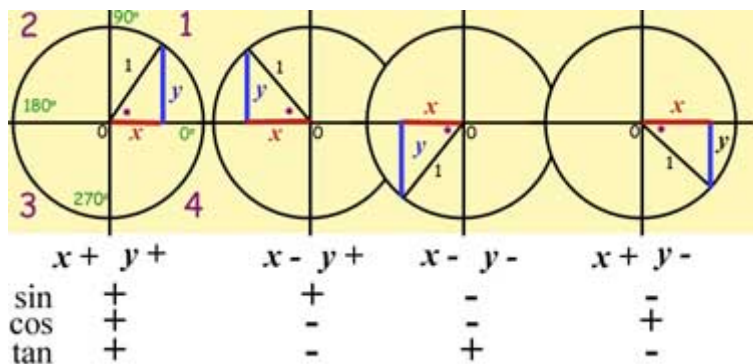


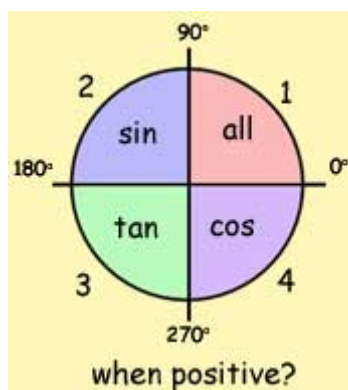
Changing sign of ratios with increasing angle

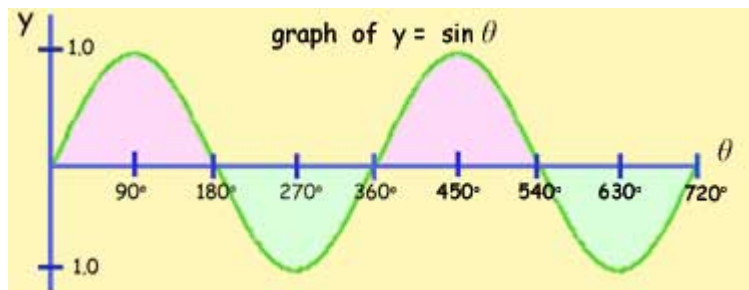
In turn, look at each ratio as the value of x and y changes with increasing angle.

$$\sin \theta = \frac{y}{1} \qquad \cos \theta = \frac{x}{1} \qquad \tan \theta = \frac{y}{x}$$



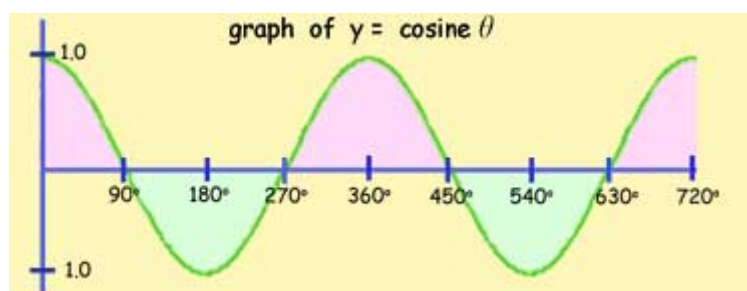
The results can be summarised in this diagram:



The Sine Curve

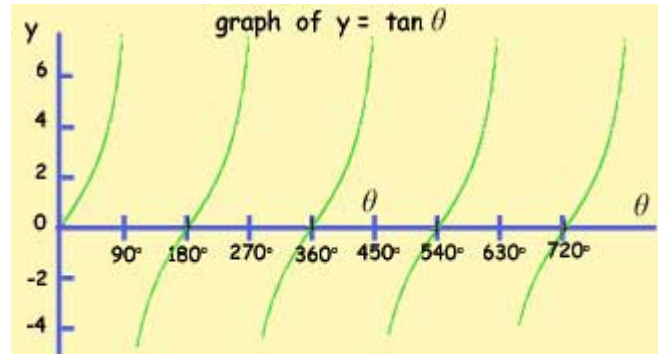
note:

- the sine graph starts at **zero**
- it repeats itself every **360** degrees
- $y$  is never more than **1** or less than **-1**
- a sin graph 'leads' a cos graph by 90 degrees

The Cosine Curve

note:

- the cosine graph starts at **one**
- it repeats itself every **360** degrees
- $y$  is never more than **1** or less than **-1**
- a cos graph 'lags' a sin graph by 90 degrees

The Tangent Curve

note:

- the tangent graph starts at **zero**
- it repeats itself every **180** degrees
- $y$  can vary between numbers approaching infinity and minus infinity