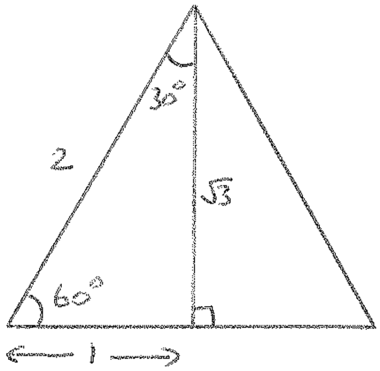
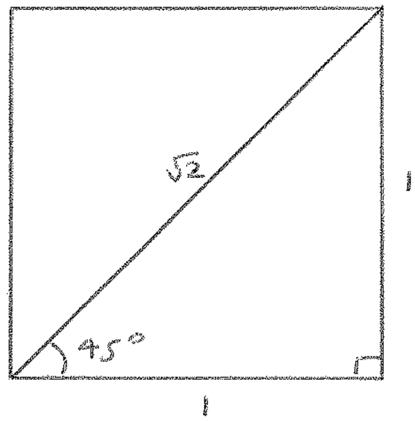
Trigonometry - Basics (2 pages; 15/4/21)

(1) Sin, cos & tan of $30°, 60°$ & $45°$





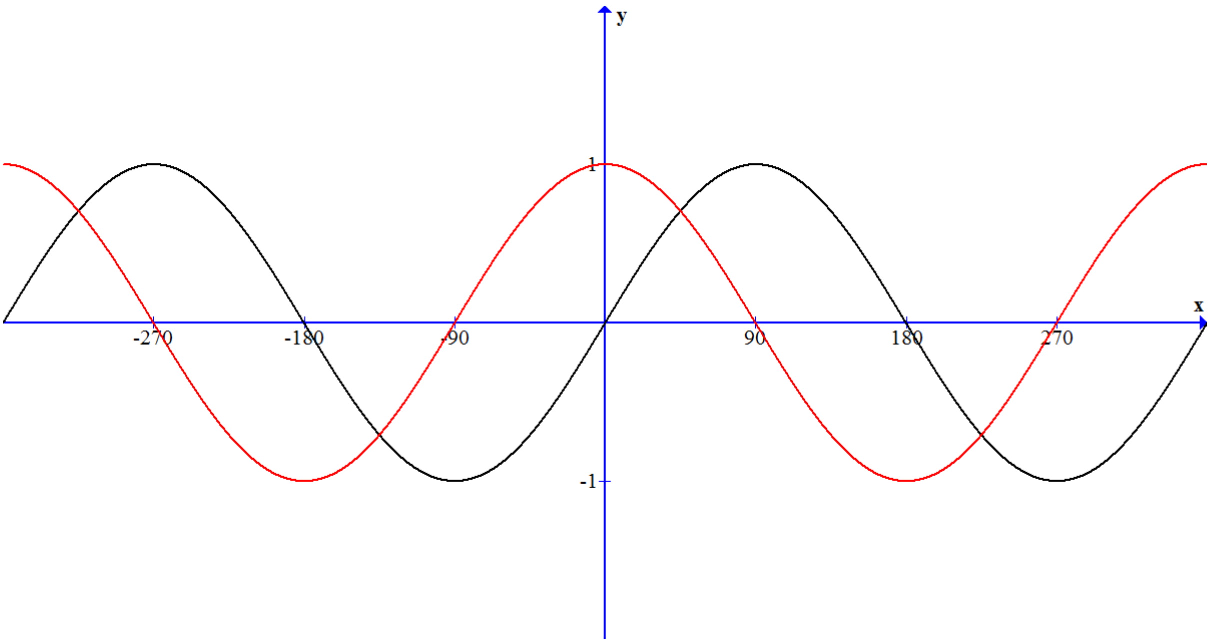
$sin30° = \frac{1}{2}; sin60° = \frac{\sqrt{3}}{2}$

$cos30° = \frac{\sqrt{3}}{2}; cos60° = \frac{1}{2}$

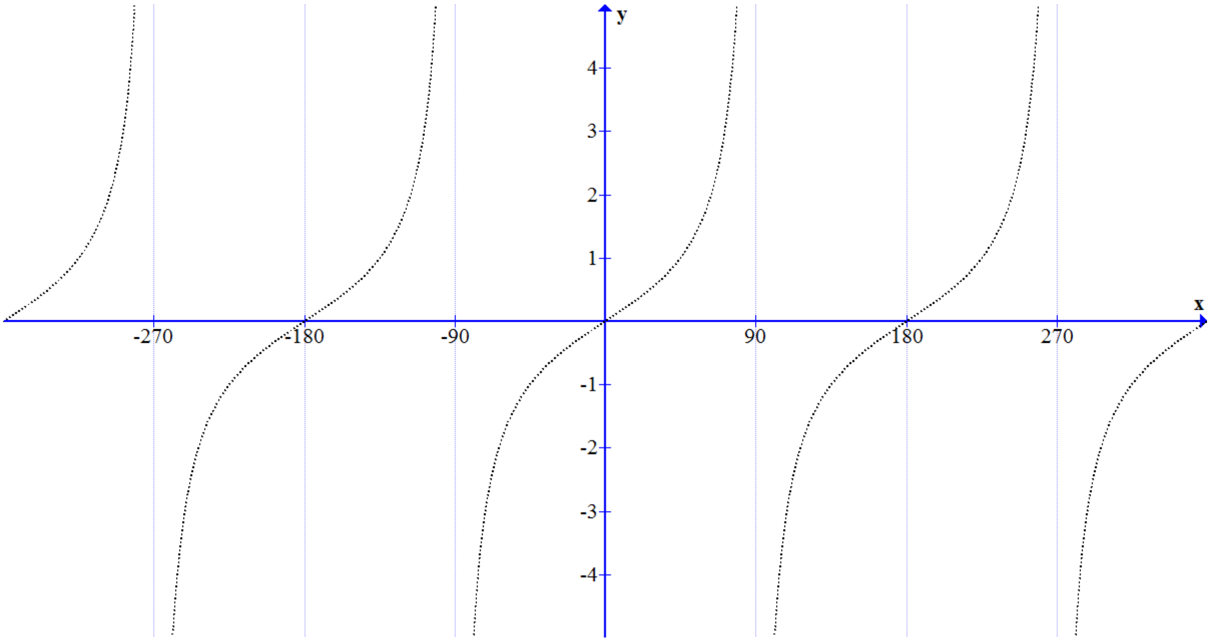
$tan30° = \frac{1}{\sqrt{3}}; tan60° = \sqrt{3}$

$cos45° = sin45° = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$tan45° = 1$



Graphs of $y = sinx\ (black)\ \&\ y = cosx\ (red)$



Graph of $y = tanx$

As $\frac{\sqrt{3}}{2}$ is larger than $\frac{1}{2}$, the shape of the sine curve makes it clear that $sin30° = \frac{1}{2}$ and $sin60° = \frac{\sqrt{3}}{2}$, rather than the other way round; and similarly for the cosine curve.

Also note that, since $tan45° = 1$ and the tangent function is increasing , we would expect $tan30°$ to be less than 1 and $tan60°$ to be greater than 1 (so that there should be no confusion as to which is $\frac{1}{\sqrt{3}}$ and which is $\sqrt{3}$).

$sin, cos\ \&\ tan$ of multiples of $30°, 45°\ \&\ 60°$ can be found by referring to the graph.