# Tangent Function : f(x) = tan (x)

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Domain: all real numbers except pi/2 + k pi, k is an integer.

Co-domain: all real numbers.

Characteristic:

-Period = pi

-x intercepts: x = k pi , where k is an integer.

-y intercepts: y = 0

-symmetry: since tan(-x) = - tan(x) then tan (x) is an odd function and its graph is symmetric with respect the origin.

-Intervals of increase/decrease: over one period and from -pi/2 to pi/2, tan (x) is increasing.

-Vertical asymptotes: x = pi/2 + k pi, where k is an integer.

Importance of tangent function:

Writing the numerators as square roots of consecutive natural numbers
$\frac{\sqrt{0}}{2}, \frac{\sqrt{1}}{2}, \frac{\sqrt{2}}{2}, \frac{\sqrt{3}}{2}, \frac{\sqrt{4}}{2}$
provides an easy way to remember the value.