Tangent Function

In right triangle trigonometry (for acute angles only), the tangent is defined as the ratio of the opposite side to the adjacent side. The unit circle definition is tan(theta)=y/x or tan(theta)=sin(theta)/cos(theta). The **tangent function** is negative whenever sine or cosine, but not both, are negative: the second and fourth quadrants. Tangent is also equal to the slope of the terminal side.

Domain: {x|x =π + kπ, k = ..., –1, 0, 1, ...} = {x|x = ..., –3π , –π , π , 3π , …}
Range: Real numbers (R)

Characteristics: Period = π
• x intercepts: x = k π , 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 –π/2 to π/2, tan (x) is increasing.
• Vertical asymptotes: x = π/2 + kπ, where k is an integer.