

CALCULUS

Derivatives of trigonometric functions

NEW

0360-1. Differentiate $f(x) = ex^9 + 4 \tan x$.

0360-2. Differentiate $u(t) = -(\sin(6))t^8 + 6e^t + e^2 - \csc t$.

0360-3. Differentiate $p(t) = t^3 \sec t$.

0360-4. Differentiate $Q(s) = \frac{-\pi e^5 - \sec s}{(\csc s)(\cot s)}$.

0360-5. Differentiate $F(x) = \frac{x^2 e^x - \cos x}{e^x \tan x}$.

NEW 0360-6. Find an equation of the tangent line to the graph of $y = \frac{6e^{-\pi/2}e^x - \cos x}{2e^{-\pi/2}e^x \csc x}$ at the point $(\pi/2, 3)$.

0360-7. A laser pointer, resting on the ground, is casting red light on a blue wall that is 18 ft away, as in the diagram. It is being turned upward, and its angle with the ground is denoted α (radians). Let y denote the distance from the point of light on the wall straight down to the ground.

a. Find a formula for y in terms of α .

b. At the moment when $\alpha = 2\pi/9$,

i. compute y and

ii. compute how fast y is changing with respect to α .

