

CALCULUS

Derivatives of trigonometric functions

OLD

0360-1. Differentiate $f(x) = 2x^7 + 4 \sin x$.

OLD

0360-2. Differentiate

OLD

$$u(s) = 2s^7 - 3e^s + \pi - \tan s.$$

0360-3. Differentiate $q(t) = t^4 \csc t$.

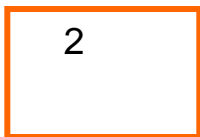
OLD

0360-4. Differentiate $G(y) = \frac{e^y - \sin y}{\sec y}$.

OLD

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

OLD



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

0360-7. A laser pointer, resting on the ground, is casting red light on a blue wall that is 10 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.

- Find a formula for y in terms of α .
- At the moment when $\alpha = \pi/6$,
 - compute y and
 - compute how fast y is changing with respect to α .

