

CALCULUS
Derivatives of inverse functions
(The Inverse Function Theorem)
NEW

0440-1. Differentiate $y = \operatorname{arccot} \left(x^e + \sqrt[5]{x} \right)$.

0440-2. Differentiate $H(s) = \left[e^{7s+3} \right] \left[\operatorname{arccot} \left(s^5 \right) \right]$.

0440-3. Differentiate $h(t) = \tan(\arccos t)$.

0440-4. Differentiate $v(t) = \arctan \left[\sqrt{\frac{1+t}{1-t}} \right]$.

0440-5. **NEW** Draw a graph of a 1-1 function f which passes through $(5, 4)$ and whose tangent line at $(5, 4)$ has slope $1/3$.

In the same picture, draw that tangent line.

In the same picture, draw a right triangle whose hypotenuse is on the tangent line and whose legs have lengths 1 and 3.

In a separate picture, reflect, through the 45° line, everything in the previous picture.

Let $g := f^{-1}$.

What are the values of $f(5)$ and $f'(5)$?

What are the values of $g(4)$ and $g'(4)$?