CALCULUS
Derivatives of inverse functions
(The Inverse Function Theorem)

OLD2

0440-1. Differentiate $y = \arcsin\left(x^e + \sqrt[4]{x}\right)$.
OLD2

0440-2. Differentiate $G(q) = \left[e^{4q-4}\right]\left[\arctan\left(q^4\right)\right]$.
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0440-3. Differentiate $g(x) = \cos(\arccos x)$.
OLD2

0440-4. Differentiate $v(t) = \operatorname{arccot}\left[\sqrt{\dfrac{1-t}{1+t}}\right]$.
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0440-5. Draw a graph of a 1-1 function f
OLD2
which passes through $(5, 4)$
and whose tangent line at $(5, 4)$ has slope $2/3$.
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 2 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 $g'(4)$?