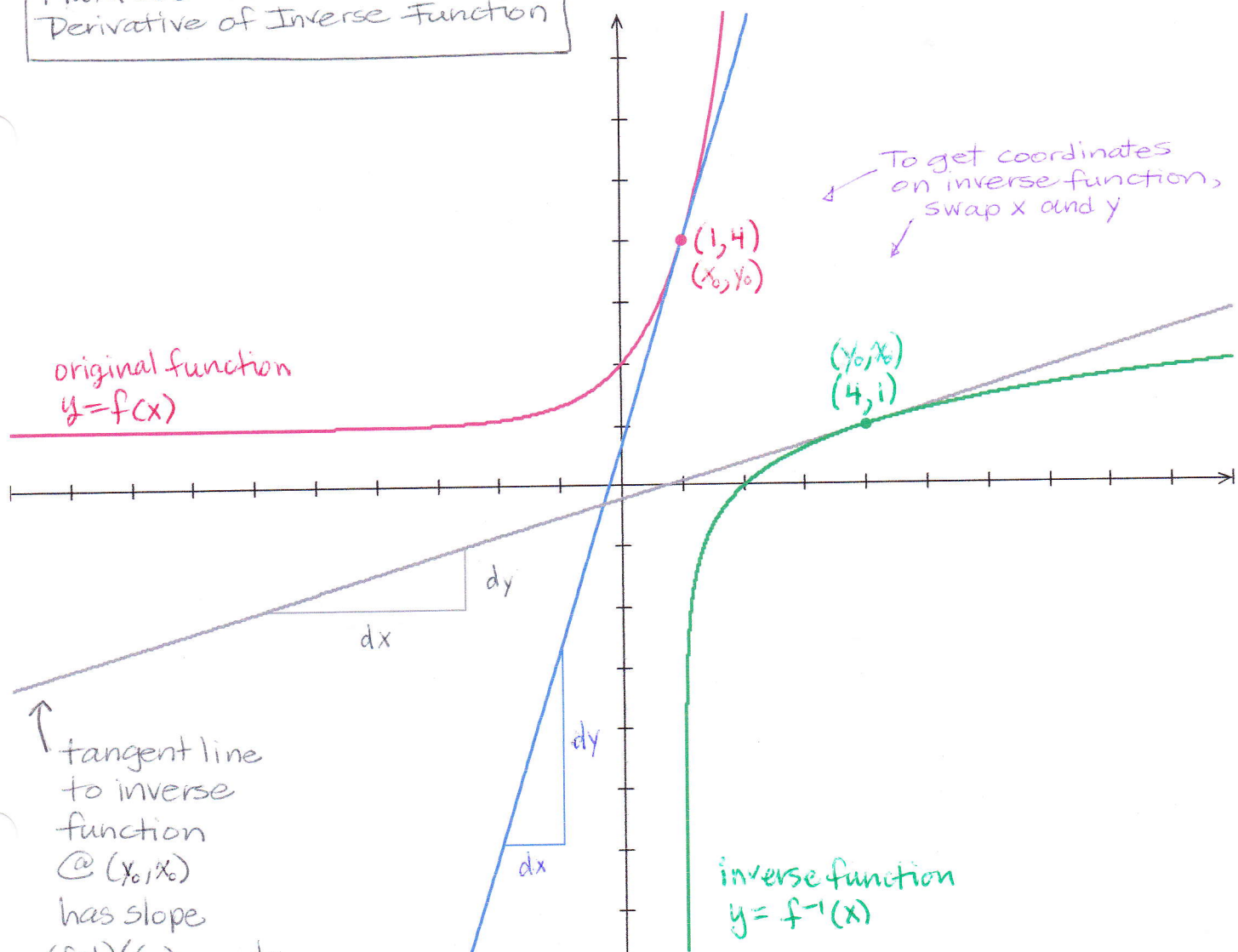


Math 250 Derivative of Inverse Function



tangent line
to inverse
function
@ (x_0, y_0)
has slope

$$(f^{-1})'(y_0) = \frac{dx}{dy}$$

↑

To get
slope of
tangent
line, take
reciprocal.

tangent line
to original
function @ (x_0, y_0)

has slope

$$m = \frac{dy}{dx} = f'(x_0)$$

$$(f^{-1})'(y_0) = \frac{1}{f'(x_0)} = \frac{1}{f'(f^{-1}(y_0))}$$

CAUTION y_0 is the x -coordinate of point (y_0, x_0) on graph of inverse
but x_0 is the x -coordinate of point (x_0, y_0) on graph of function.

$$f(x_0) = y_0 \quad \text{or} \quad x_0 = f^{-1}(y_0)$$