

Derivatives of Inverse Trig Functions

Warm up

1.

Find $\sin y$, $\cos y$, $\tan y$

$$x = f(g(x))$$

$$1 = f'(g(x))g'(x)$$

$$g'(x) = \frac{1}{f'(g(x))}$$

2 If $f(2) = 3$ and $f^{-1}(x) = g(x)$
 $f'(3) = 4$

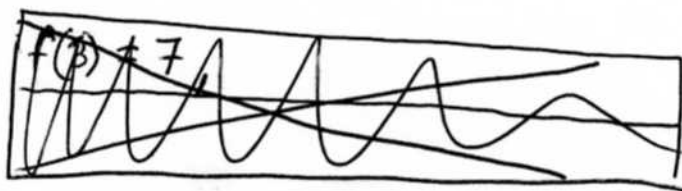
Given $f^{-1}(x) = g(x)$

$$f(2) = 3$$

$$f(3) = 5$$

$$f'(2) = 7$$

$$f'(3) = 8$$

Find $g'(3) =$

3. ~~Find~~ ~~the~~ ~~answer~~ Find $\sin^{-1}(\frac{\sqrt{3}}{2})$ } $g'(3) = \frac{1}{f'(g(3))} = \frac{1}{f'(2)} = \frac{1}{7}$

Derivative of Arc sin

$$y = \sin^{-1}(x)$$

$$\sin y = x$$

$$(\cos y)(y') = 1$$

$$y' = \frac{1}{\cos y} = \frac{1}{\sqrt{1-x^2}}$$



