

3.8

(23)

$$y = \sec^{-1} x, \quad x = 2 \quad (2, \frac{\pi}{3})$$

$$y(2) = \sec^{-1}(2)$$

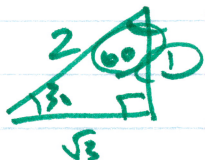
$$\cos^{-1}\left(\frac{1}{2}\right)$$

$$y = \frac{\pi}{3}$$

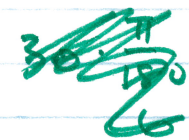
$$y' = \frac{1}{|x|\sqrt{x^2-1}}$$

$$y'(2) = \frac{1}{2\sqrt{3}}$$

$$\frac{2x}{4}$$



$$y - \frac{\pi}{3} = \frac{1}{2\sqrt{3}}(x-2)$$



$$60 \cdot \frac{\pi}{3}$$

(5) $y = \sin^{-1} \frac{3}{t^2}$

$$3t^{-2}$$

$$-6t^{-3}$$

$$\sqrt{8}$$

$$\sqrt{4} \cdot \sqrt{2}$$

$$2\sqrt{2}$$

$$y' = \frac{1}{\sqrt{1 - \left(\frac{3}{t^2}\right)^2}} \left[\frac{-6}{t^3} \right]$$

$$\frac{t^2}{t^2} = \frac{1}{\sqrt{1 - \frac{9}{t^4}}} \cdot \frac{-6}{t^3}$$

$$= \frac{t^2}{\sqrt{t^4 \left(1 - \frac{9}{t^4}\right)}} \cdot \frac{-6}{t^3}$$

$$= \frac{-6}{t\sqrt{t^4 - 9}}$$

$\frac{2}{3} \cdot \frac{4}{5}$
 $\frac{3}{5} \cdot \frac{4}{5}$

3.8 f 8 $(1-x^2)^{1/2}$

⑦ $y = x \sin^{-1} x + \sqrt{1-x^2}$

$y' = \sin^{-1} x + \frac{1}{\sqrt{1-x^2}} \cdot (x) + \frac{1}{2} (1-x^2)^{-1/2} [-2x]$
 $= \sin^{-1} x + \frac{x}{\sqrt{1-x^2}} + \frac{-x}{\sqrt{1-x^2}}$

$\boxed{= \sin^{-1} x}$

⑩⑦ $y = \sec^{-1}(\frac{1}{t})$

$y' = \frac{1}{|\frac{1}{t}| \sqrt{(\frac{1}{t})^2 - 1}} \left[-\frac{1}{t^2} \right]$

$\frac{t}{t} y' = \frac{|t|}{\sqrt{\frac{1}{t^2} - 1}} \cdot -\frac{1}{t^2}$

$y' = \frac{t^2}{\sqrt{t^2(\frac{1}{t^2} - 1)}} \cdot -\frac{1}{t^2}$

$= \frac{t^2}{\sqrt{1-t^2}} \cdot -\frac{1}{t^2}$

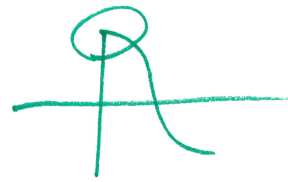
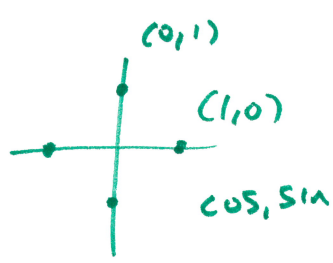
$\boxed{= \frac{-1}{\sqrt{1-t^2}}}$

⑩③⑦ $\frac{d}{dx} \sin^{-1}(\frac{x}{2})$

$\frac{1}{\sqrt{1-(\frac{x}{2})^2}} \left[\frac{1}{2} \right]$

$\frac{2}{2} \cdot \frac{1}{\sqrt{1-\frac{x^2}{4}}} \left[\frac{1}{2} \right]$

$\frac{2}{\sqrt{4(1-\frac{x^2}{4})}} \cdot \frac{1}{2} = \boxed{\frac{1}{\sqrt{4-x^2}}}$



3.8

(29c)

$$f(x) = \cos x + 3x$$

$$f(0) = \cos(0) + 3(0) = 1$$

$$f^{-1}(x)$$

$$(0,1) \longleftrightarrow (1,0)$$

$$f'(x) = -\sin x + 3$$

$$f'(0) = -\sin(0) + 3 = 3$$

$$f^{-1}(1) = 0$$

$$(f^{-1})'(1) = \frac{1}{3}$$

3.8

29) $f(x) = \cos x + 3x$

$$f(0) = \cos 0 + 3(0) = 1$$

$$f(0) = 1$$

$$(0, 1) \leftrightarrow (1, 0)$$

$$f'(0) = 3$$

$$f'(x) = -\sin x + 3$$

$$f'(0) = -\sin 0 + 3 = 3$$

$$f^{-1}(1) = 0$$

$$(f^{-1})'(1) = \frac{1}{3}$$

$$f(x) = \cos x + 3x$$

$$(f^{-1})'(1)$$

$$\rightarrow 1 = \cos x + 3x$$

$x = 0$

$$(0, 1) \leftrightarrow (1, 0)$$

$$f'(x) = -\sin x + 3$$

$$f'(0) = -\sin 0 + 3 = 3$$

$$f(x) = x^5 + 2x^3 + x - 1$$

$$(f^{-1})'(3)$$