$y = \boxed{4\sec 3x}\boxed{\tan 3x}$

$4\sec 3x \cdot \sec^2 3x \cdot 3 + \tan 3x \cdot 4\sec 3x \tan 3x \cdot 3$

$\boxed{12\sec^3 3x + 12\sec 3x \tan^2 3x}$

14) $y = \sin x(x + \cos x)$

$\sin x \cdot (1 - \sin x) +$

$(x + \cos x) \cdot \cos x$

$\sin x - \sin^2 x +$

$x\cos x + \cos^2 x$

$y = (\cos 2x)^{1/3}$

$y' = \frac{1}{3}(\cos 2x)^{-2/3} \cdot -\sin 2x \times 2$

$y' = \dfrac{-2\sin 2x}{3\sqrt[3]{(\cos 2x)^2}}$

$y = \dfrac{1+\sin x}{\cos x}$

$\dfrac{(\cos x)(0+\cos x) - (1+\sin x)(-\sin x)}{(\cos x)^2}$

$y' = \dfrac{\cos^2 x - (-\sin x - \sin^2 x)}{(\cos x)^2}$

$y' = \dfrac{\cos^2 x + \sin x + \sin^2 x}{(\cos x)^2}$

$y' = \dfrac{(\cos^2 x + \sin^2 x) + \sin x}{\cos x^2}$

$y' = \dfrac{1+\sin x}{(\cos x)^2}$

Wolfram says →

$\dfrac{1+\sin x}{\cos^2 x} = \sec x(\tan x + \sec x)$

$\dfrac{1}{\cos^2 x} + \dfrac{\sin x}{\cos^2 x}$

$\sec^2 x + \dfrac{\sin x}{\cos x} \cdot \dfrac{1}{\cos x}$

$\sec^2 x + \tan x \sec x$

$\sec x(\sec x + \tan x)$

5) $y = 6\cos x^2$

6) $y = 6\cos^2 x$

$6\cos(x^2)$

$-6\sin(x^2) \cdot 2x$

$y' = -12x\sin(x^2)$

$6(\cos x)^2$

$6 \cdot 2(\cos x) \cdot (-\sin x)$

$-12\sin x\cos x$

$-6 \cdot 2\sin x\cos x$

$-6\sin 2x$

Find derivatives of each.

① $y = \sqrt[4]{\sin 4x}$

② $f(x) = 3\tan\left(\frac{2}{3}x\right)$

③ $y = \dfrac{1+\cos x}{\sin x}$