p. 153 #14

$y = (\csc x + \cot x)^{-1}$ $\frac{dy}{dx}$

$\frac{dy}{dx} = -1(\csc x + \cot x)^{-2} \cdot (-\csc x \cot x - \csc^2 x)$

$= \frac{\csc x \cot x + \csc^2 x}{(\csc x + \cot x)^2}$

$= \frac{\csc x(\cot x + \csc x)}{(\cot x + \csc x)^2}$

$= \frac{\csc x}{\cot x + \csc x}$

#17 $y = \sin^3 x \cdot \tan 4x$

$y = (\sin x)^3 \cdot \tan(4x)$

$u = (\sin x)^3$ $v = \tan(4x)$

$u' = 3\sin^2 x \cos x$ $v' = \sec^2(4x) \cdot 4$

$= 4\sec^2(4x)$

$\frac{dy}{dx} = u'v + uv'$ product

$= 3\sin^2 x \cos x \tan 4x + 4\sin^3 x \sec^2 4x$

$= \sin^2 x(3\cos x \tan 4x + 4\sin x \sec^2 4x)$

p. 162 #1

$x^2y + xy^2 = 6$ find $\frac{dy}{dx}$

$2x \cdot y + x^2 \cdot \frac{dy}{dx} + 1 \cdot y^2 + x \cdot 2y \cdot \frac{dy}{dx} = 0$

$u\ x^2 \quad V = y \qquad u = x \quad V = y^2$

$u'\ 2x \quad V' = \frac{dy}{dx} \qquad u' = 1 \quad V' = 2y \cdot \frac{dy}{dx}$

$x^2 \frac{dy}{dx} + 2xy \frac{dy}{dx} = -2xy - y^2$

$\frac{dy}{dx}(x^2 + 2xy) = -2xy - y^2$

$\frac{dy}{dx} = \frac{-2xy - y^2}{2xy + x^2} = -\frac{2xy + y^2}{2xy + x^2}$