$f(x)$	$f'(x)$
$\sin x$	$\cos x$
$\cos x$	$-\sin x$
$\tan x$	$\sec^2 x$

$f(x)$	$f'(x)$
$\csc x$	$-\csc x \cot x$
$\sec x$	$\sec x \tan x$
$\cot x$	$-\csc^2 x$

EXER 9B
P. 440
#1

(1) a.) $y = \cot x$

$$y = \frac{\cos x}{\sin x}$$

$$\frac{dy}{dx} = \frac{\sin x(-\sin x) - \cos x(\cos x)}{\sin^2 x}$$

$$= \frac{-(\sin^2 x + \cos^2 x)}{\sin^2 x}$$

$$\boxed{\frac{dy}{dx} = -\csc^2 x}$$

b.) $y = \csc x$

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

$$\frac{dy}{dx} = -(\sin x)^{-2} \cdot \cos x$$

$$= -\frac{\cos x}{\sin^2 x}$$

$$\boxed{\frac{dy}{dx} = -\csc x \cot x}$$

c.) $y = \sin 3x$

$$\frac{dy}{dx} = \cos 3x \cdot 3$$

$$\boxed{\frac{dy}{dx} = 3\cos 3x}$$

d.) $y = \tan(5x-3)$

$$\frac{dy}{dx} = \sec^2(5x-3) \cdot 5$$

$$\boxed{\frac{dy}{dx} = 5\sec^2(5x-3)}$$

e.) $y = \cos(8-3x)$

$$\frac{dy}{dx} = -\sin(8-3x) \cdot -3$$

$$\boxed{\frac{dy}{dx} = 3\sin(8-3x)}$$

f.) $y = \csc\left(\frac{x-3}{4}\right)$

$$\frac{dy}{dx} = -\csc\left(\frac{x-3}{4}\right)\cot\left(\frac{x-3}{4}\right) \cdot \frac{1}{4}$$

$$\boxed{\frac{dy}{dx} = \frac{-\csc\left(\frac{x-3}{4}\right)\cot\left(\frac{x-3}{4}\right)}{4}}$$

g.) $y = \cot\left(\frac{7-2x}{13}\right)$

$$\frac{dy}{dx} = -\csc^2\left(\frac{7-2x}{13}\right) \cdot \left(-\frac{2}{13}\right)$$

$$\boxed{\frac{dy}{dx} = \frac{2}{13}\csc^2\left(\frac{7-2x}{13}\right)}$$

9B (cont.) P.440 #2

(2) a) $y = \sin(x^5 - 3)$

$\frac{dy}{dx} = \cos(x^5-3) \cdot 5x^4$

$\boxed{\frac{dy}{dx} = 5x^4 \cos(x^5-3)}$

b.) $y = \cos(e^x)$

$\frac{dy}{dx} = -\sin(e^x) \cdot e^x$

$\boxed{\frac{dy}{dx} = -e^x \sin(e^x)}$

c.) $y = \csc(x^2+11)$

$\frac{dy}{dx} = -\csc(x^2+11)\cot(x^2+11) \cdot 2x$

$\boxed{\frac{dy}{dx} = -2x \csc(x^2+11)\cot(x^2+11)}$

d.) $y = \cot(4x^3 - 2x^2 + 7x + 17)$

$\frac{dy}{dx} = -\csc^2(4x^3 - 2x^2 + 7x + 17) \cdot (12x^2 - 4x + 7)$

$\boxed{\frac{dy}{dx} = (-12x^2 + 4x - 7)\csc^2(4x^3 - 2x^2 + 2x + 17)}$

e.) $y = \tan(\ln(2x+1))$

$\frac{dy}{dx} = \sec^2(\ln(2x+1)) \cdot \frac{1}{2x+1} \cdot 2$

$\boxed{\frac{dy}{dx} = \left(\frac{2}{2x+1}\right)\sec^2(\ln(2x+1))}$

f.) $y = \sec\left(\sqrt{e^x+1}\right)$

$\frac{dy}{dx} = \sec\left(\sqrt{e^x+1}\right)\tan\left(\sqrt{e^x+1}\right) \cdot \frac{1}{2}(e^x+1)^{-1/2} \cdot e^x$

$\boxed{\frac{dy}{dx} = \frac{e^x \sec\left(\sqrt{e^x+1}\right)\tan\left(\sqrt{e^x+1}\right)}{2\sqrt{e^x+1}}}$

g.) $y = \sin(\cos(\tan x))$

$\frac{dy}{dx} = \cos(\cos(\tan x))(-\sin(\tan x))(\sec^2 x)$

$\frac{dy}{dx} = -\sec x (\cos(\tan x))(\sin(\tan x))$

$\sin 2x = 2\sin x \cos x$

$\frac{dy}{dx} = -\frac{1}{2}\sec x \sin(2\tan x)$

$\frac{dy}{dx} = -\cos(\cos(\tan x))(\sin(\tan x))(\sec^2 x)$