3-0235 — 50 SHEETS — 5 SQUARES
3-0236 — 100 SHEETS — 5 SQUARES
3-0237 — 200 SHEETS — 5 SQUARES
3-0137 — 200 SHEETS — FILLER
COMET

1) $f(x) = 3x^2 - 2\cos x$

$f'(x) = 6x - 2(-\sin x)$

$= \boxed{6x + 2\sin x}$

2) $f(x) = \sqrt{x}\sin x$

$f'(x) = \sqrt{x}(\sin x)' + (\sqrt{x})'\sin x$

$= x^{1/2}\cos x + \frac{1}{2}x^{-1/2}\sin x$

$= \boxed{\sqrt{x}\cos x + \frac{1}{2\sqrt{x}}\sin x}$

6) $g(t) = 4\sec t + \tan t$

$\boxed{g'(t) = 4\sec t\tan t + \sec^2 t}$

8) $y = e^u(\cos u + cu)$

$y' = e^u(\cos u + cu)' + (e^u)'(\cos u + cu)$

$= e^u(-\sin u + c) + e^u(\cos u + cu)$

$= \boxed{e^u(\cos u - \sin u + cu + c)}$

15) $f(x) = xe^x\csc x$

$u = xe^x$ $\quad$ $v = \csc x$

$u' = e^x + xe^x$ $\quad$ $v' = -\csc x\cot x$

$= e^x(x+1)$

$f'(x) = uv' + vu'$

$= xe^x(-\csc x\cot x) + \csc x(e^x(x+1))$

$= e^x(-x\csc x\cot x + x\csc x + \csc x)$

$= \boxed{e^x\csc x(1 + x - x\cot x)}$

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COMET

17) Prove $\frac{d}{dx} \csc x = \boxed{-\csc x \cot x}$

$f(x) = \csc x = \frac{1}{\sin x}$

let $u = 1$ $\quad v = \sin x$
$u' = 0$ $\quad v' = \cos x$

$$f'(x) = \frac{vu' - uv'}{v^2} = \frac{\sin x\,(0) - (1)\cos x}{\sin^2 x}$$

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

$$= -\frac{1}{\sin x}\,\frac{\cos x}{\sin x}$$

$$= \boxed{-\csc x \cot x}$$

18) Prove $\frac{d}{dx} \sec x = \boxed{\sec x \tan x}$

$f(x) = \sec x = \frac{1}{\cos x}$

let $u = 1$ $\quad v = \cos x$
$u' = 0$ $\quad v' = -\sin x$

$$f'(x) = \frac{vu' - uv'}{v^2} = \frac{\cos x\,(0) - (1)(-\sin x)}{\cos^2 x}$$

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

$$= \left(\frac{1}{\cos x}\right)\left(\frac{\sin x}{\cos x}\right)$$

$$= \boxed{\sec x \tan x}$$