QUIZ 6 | Name: Answer Key

$f(x) = 3e^x \cos x$

Find $f'(x)$

let $u = 3e^x$ $\quad v = \cos x$

$u' = 3e^x$ $\quad v' = -\sin x$

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

$= 3e^x(-\sin x) + \cos x\,(3e^x)$

$$\boxed{f'(x) = 3e^x(\cos x - \sin x)}$$

$f(x) = \dfrac{1+\sin x}{x+\cos x}$ $\quad u = 1+\sin x$ $\quad v = x+\cos x$

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

Find $f'(x) = \dfrac{vu' - v'u}{u^2}$

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

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

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

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

$$= \frac{x\cos x - 1 + 1}{(x+\cos x)^2}$$

$$\boxed{f'(x) = \frac{x\cos x}{(x+\cos x)^2}}$$

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