sno.

Q) $\frac{2}{\frac{1}{\sin t}+\frac{1}{\cos t}} \cdot \frac{\sin t \cos t}{\sin t \cos t} - \frac{\sin t - \cos t}{\frac{\sin t}{\cos t}-\frac{\cos t}{\sin t}} \cdot \frac{\sin t \cos t}{\sin t \cos t}$ (2) (2)

$= \frac{2 \sin t \cos t}{\cos t + \sin t}$ (3) $- \frac{(\sin t - \cos t)\sin t \cos t}{\sin^2 t - \cos^2 t}$ (3)

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

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

[b] $\dfrac{1+\cos A}{1-\sin A}(-\cot A)^2$

$= \dfrac{1+\cos A}{1-\sin A}\boxed{\cot^2 A}$ (2)

$= \dfrac{1+\cos A}{1-\sin A}\boxed{\dfrac{\cos^2 A}{\sin^2 A}}$ (2)

$= \dfrac{1+\cos A}{1-\sin A}\boxed{\dfrac{1-\sin^2 A}{1-\cos^2 A}}$ (2)

$= \dfrac{1+\cos A}{1-\sin A}\boxed{\dfrac{(1+\sin A)(1-\sin A)}{(1+\cos A)(1-\cos A)}}$ (1) $= \boxed{\dfrac{1+\sin A}{1-\cos A}}$ (1)

[c] ② $\cot^4 y + 4\csc^2 y$

$= \overset{②}{(\csc^2 y - 1)^2} + 4\csc^2 y$

$= \csc^4 y - 2\csc^2 y + 1 + 4\csc^2 y$

$= \overset{②}{\csc^4 y + 2\csc^2 y + 1} = (1 + \csc^2 y)^2$ ①

[3][a] $\dfrac{-(\sec^2\theta - \tan^2\theta) - \cot^2\theta}{\sin^2\theta}$ (1)

$= \dfrac{-1 - \cot^2\theta}{\sin^2\theta}$ (1½)

$= -(1 + \cot^2\theta)\csc^2\theta$

$= -\csc^2\theta \csc^2\theta$ (1½)

$= -\csc^4\theta$ (1½)

[b] $\dfrac{\sec x - \sin x}{\cos x - \csc x}$ (2)

$= \dfrac{\frac{1}{\cos x} - \sin x}{\cos x - \frac{1}{\sin x}} \cdot \dfrac{\sin x \cos x}{\sin x \cos x}$ (1½)

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

$= \dfrac{\sin x (1 - \sin x \cos x)}{\cos x (\sin x \cos x - 1)}$ (2)

$= -\tan x$ (1)