Assignment 7 (15/1)

...squints eye...

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Problem 1

Integrate the following.

(a) $\dfrac{\sec^2 x}{\sqrt{\sec x + \tan x}}$

(b) $\dfrac{e^x}{e^{4x} + e^{2x} + 1} - \dfrac{e^{-x}}{e^{-4x} + e^{-2x} + 1}$

(c) $\dfrac{\cos^2 x}{1 + a^x}$ from $-\pi$ to π. [assume $a > 0$]

(d) $\dfrac{\cos^4 x}{\sin^2 x}$

(e) $\dfrac{1}{2 + \cos x}$

(f) $\dfrac{1}{1 + \sin x + \cos x}$

(g) $\dfrac{2 + 3\cos x}{\sin x + 2\cos x + 3}$
[Hint: Write Num.= $l\times$ Den. + $m\times$ (derivative of den.) + n for some constants l, m, n]

(h) $\dfrac{1}{1 - 2a\cos x + a^2}$, $1 > a > 0$

(i) $\dfrac{x}{\sqrt{9 + 8x - x^2}}$

(j) $\dfrac{1}{\sin^2 x + \sin 2x}$

□