I(12). Evaluate

(a) $\lim_{x\to 0} \dfrac{2x + sin^{-1}(x)}{3x + tan^{-1}(x)}$ (b) $\lim_{x\to\infty} \dfrac{ln(1+2x^2)}{1 - cos(3x)}$ (c) $\lim_{x\to 1} \dfrac{x}{\sqrt{1+2x} - \sqrt{1-4x}}$

II(28). Evaluate

$(a) \int x\ \cosh(3x)dx$ $(b) \int \dfrac{cos^3(x)}{\sqrt{sin(x)}}dx$ (c) $\int \dfrac{1}{x^2\sqrt{x^2+9}}dx$

$(d) \int \dfrac{1}{(x+1)(x+2)(x+3)}dx$ $(e) \int_0^{16} \dfrac{1}{1+x^{1/4}}dx$

$(f) \int \dfrac{1}{3sin(x) - 4cos(x)}dx$ $(h) \int_0^1 \dfrac{x-1}{x^2+2x+2}dx$

$IF \quad t = tan(\dfrac{x}{2}), \ THEN \quad sin(x) = \dfrac{2t}{1+t^2}, \quad cos(x) = \dfrac{1-t^2}{1+t^2}, \quad dx = \dfrac{2}{1+t^2}dt.$