

Integral Calculus - 1

Date Planned : __ / __ / __	Daily Tutorial Sheet - 7	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration : _____

91. If $I_{m,n} = \int \cos^m x \cos nx \, dx$, then show that: $I_{m,n} = \frac{\cos^m x \sin nx}{m+n} + \frac{m}{m+n} I_{m-1,n-1}$

92. Find the formula for $\int e^{ax} \sin^n x \, dx$.



93. $\int \frac{x\sqrt{a^2 - x^2}}{a^2 + x^2} \, dx$

94. $\int \left[\log \log x + \frac{1}{(\log x)^2} \right] \, dx$

95. $\int \sqrt{\frac{a^2 - x^2}{x^8}} \, dx$

96. $\int \frac{1}{\sqrt{\sin^3 x \sin(x+a)}} \, dx$

97. $\int \frac{\sqrt{\cos 2x}}{\sin x} \, dx$



98. $\int \frac{1}{(a + b \cos x)^2} \, dx, a > b$

99. $\int \frac{e^x (x^3 - x + 2)}{(1 + x^2)^2} \, dx$

100. $\int x \sin^{-1} \left[\frac{1}{2} \sqrt{\frac{2a-x}{a}} \right] \, dx$