Date Planned : __ / __ / __	Daily Tutorial Sheet - 9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration :_____

111. $\int \frac{dx}{x\left(1+\sqrt[3]{x}\right)^2}$ is equal to:

(A) $3\left(\log \frac{x^{1/3}}{1+x^{1/3}}+\frac{1}{1+\sqrt[3]{x}}\right)+C$ **(B)** $3\left(\log \frac{1+\sqrt[3]{x}}{\sqrt[3]{x}}+\frac{1}{1+\sqrt[3]{x}}\right)+C$

(C) $3\left(\log \frac{1+\sqrt[3]{x}}{\sqrt[3]{x}}-\frac{1}{1+\sqrt[3]{x}}\right)+C$ **(D)** None of these

112. $\int \frac{dx}{x^{1/2}(1+x^2)^{5/4}}$ is equal to:

(A) $\frac{-2\sqrt{x}}{\sqrt[4]{1+x^2}}+C$ **(B)** $\frac{2\sqrt{x}}{\sqrt[4]{1+x^2}}+C$ **(C)** $\frac{-\sqrt{x}}{\sqrt[4]{1+x^2}}+C$ **(D)** $\frac{\sqrt{x}}{\sqrt[4]{1+x^2}}+C$

113. $\int \frac{dx}{(1+x)^5\sqrt{x^2+2x}}=\frac{-1}{8}\left(3\theta-2\sin 2\theta+\frac{\sin 4\theta}{4}\right)+C$, where :

(A) $\theta = \sin^{-1}(x+1)$ **(B)** $\theta=\sin^{-1}\left(\frac{1}{1+x}\right)$

(C) $\theta = 2\sin^{-1}\left(\frac{1}{1+x}\right)$ **(D)** None of these

114. If $f(x)=\int \frac{2+\sqrt{x}}{\left(x+1+\sqrt{x}\right)^2}dx$ and $f(0)=0$, then the value of $[f(4)]$ is: (where [.] represents the greatest integer function).

(A) 0 **(B)** 1 **(C)** 2 **(D)** 4

115. If $f(x)=\int \frac{\left(5x^4+4x^5\right)}{\left(x^5+x+1\right)^2}dx$ and $f(0)=0$, then the value of $f(1)$ is:

(A) 1 **(B)** $\frac{1}{2}$ **(C)** $\frac{1}{3}$ **(D)** $\frac{1}{5}$

116. For any natural number t, $\int \left(x^{3t}+x^{2t}+x^t\right)\left(2x^{2t}+3x^t+6\right)^{1/t}dx$ is :

(A) $\frac{1}{6(t+1)}\left(2x^{3t}+3x^{2t}+6x^t\right)^{\frac{t+1}{t}}+C$ **(B)** $\frac{1}{6t}\left(2x^{2t}+3x^t+6x\right)^t+C$

(C) $\frac{1}{t+1}\left(x^{3t}+x^{2t}+x^t\right)^2+C$ **(D)** None of these

117. If $I^r(x)$ means *log log log* ..... x, the log being repeated r times, then $\int\left[x\,I(x)I^2(x)I^3(x)...I^r(x)\right]^{-1}dx$ is equal to:

(A) $I^{r+1}(x)+C$ **(B)** $\dfrac{I^{r+1}(x)}{r+1}+C$ **(C)** $I^r(x)+C$ **(D)** None of these

118. The value of :

$\int e^{\sec x}\,.\sec^3 x\left(\sin^2 x+\cos x+\sin x+\sin x\cos x\right)dx$ is:

(A) $e^{\sec x}\left(\sec^2 x+\sec x\tan x\right)+C$ **(B)** $e^{\sec x}+C$

(C) $e^{\sec x}\left(\sec x+\tan x\right)+C$ **(D)** None of these

119. The value of $\int\dfrac{ax^2-b}{x\sqrt{c^2x^2-\left(ax^2+b\right)^2}}\,dx$ is:

(A) $\sin^{-1}\left(\dfrac{ax+\dfrac{b}{x}}{c}\right)+k$ **(B)** $\sin^{-1}\left(\dfrac{ax^2+\dfrac{b}{x^2}}{c}\right)+k$

(C) $\cos^{-1}\left(\dfrac{ax+\dfrac{b}{x}}{c}\right)+k$ **(D)** $\cos^{-1}\left(\dfrac{ax^2+\dfrac{b}{x^2}}{c}\right)+k$

120. $\int\dfrac{\left(x^2-1\right)dx}{x^3\sqrt{2x^4-2x^2+1}}$ is equal to:

(A) $\dfrac{\sqrt{2x^4-2x^2+1}}{x^2}+C$ **(B)** $\dfrac{\sqrt{2x^4-2x^2+1}}{x^3}+C$

(C) $\dfrac{\sqrt{2x^4-2x^2+1}}{x}+C$ **(D)** $\dfrac{\sqrt{2x^4-2x^2+1}}{2x^2}+C$