PURE MATHS OBJECTIVES

#LEARN WITH WROK

ANSWERS: INTEGRATION MCQS

1. (D)
2. (A)
3. (C)
4. (B)
5. (D)

1. $\int\left(x^2+\frac{2}{x^3}-7\right)dx=\int\left(x^2+2x^{-3}-7\right)dx$

$$=\frac{x^3}{3}+\frac{2x^{-2}}{-2}-7x+c$$

$$=\frac{x^3}{3}-\frac{1}{x^2}-7x+c$$

2. $\int\left(\sqrt{x}-\frac{1}{\sqrt{x}}+\sqrt[3]{x}\right)dx=\int\left(x^{1/2}-x^{-1/2}+x^{1/3}\right)dx$

$$=\frac{x^{3/2}}{3/2}-\frac{x^{1/2}}{1/2}+\frac{x^{4/3}}{4/3}+c$$

$$=\frac{2}{3}x^{3/2}-2x^{1/2}+\frac{3}{4}x^{4/3}+c$$

3. $\int\sec^2 5x dx=\frac{\tan 5x}{5}+c$ $\quad\because\ \int\sec^2 x=\tan x+c$

$\because\ \frac{d}{dx}5x=5$

4. $\int \cos\sqrt{x}dx = \dfrac{\sin\sqrt{x}}{\dfrac{1}{2\sqrt{x}}}$ $\quad \because \int \cos x = \sin x + c$

$= 2\sqrt{x}\sin\sqrt{x}$ $\quad \because \dfrac{d}{dx}\sqrt{x} = \dfrac{1}{2\sqrt{x}}$

5. $\int \sin^2 x \cos x dx$

Let $u = \sin x$

$\dfrac{du}{dx} = \cos x \quad \Rightarrow du = \cos x dx$

By Replacing $\sin x = u$ and $\cos x = du$, we have

$\int \sin^2 x \cos x dx = \int u^2 du$

$= \dfrac{u^3}{3} + c$

$= \dfrac{1}{3}\sin^3 x + c$