INTEGRATION - CBSE

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1. Evaluate:

$$\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} x\cos^2 x dx \tag{1}$$

2. Find the integrating factor of the differential equation

$$x\frac{dy}{dx} = 2x^2 + y \tag{2}$$

3. Find:

$$\int \frac{\tan^3 x}{\cos^3 x} dx \tag{3}$$

4. Solve the following differential equation:

$$\left(1 + e^{\frac{y}{x}}\right) dy + e^{\frac{y}{x}} \left(1 - \frac{y}{x}\right) dx = 0 \, (x \neq 0) \tag{4}$$

5. Evaluate:

$$\int_0^{\frac{\pi}{2}} \sin 2x \tan^{-1}(\sin x) dx \tag{5}$$

6. Using integration, find the area lying above x-axis and included between the circle $x^2 + y^2 = 8x$ and inside the parabola $y^2 = 4x$.

7. Using the method of integration, find the area of the triangle ABC, coordinates of whose vertices are $A\,(2, 0)$, $B\,(4, 5)$ and $C\,(6, 3)$.