Homework on Trigonometric integrals - Set 1

■ 1.

$$\int \sin^3(x)\cos^5(x)\,dx$$

$$\frac{\sin^8(x)}{8} - \frac{\sin^6(x)}{3} + \frac{\sin^4(x)}{4} \text{ OR } \frac{\cos^8(x)}{8} - \frac{\cos^6(x)}{6}$$

■ 2.

$$\int \sin^4(x)\cos^3(x)\,dx$$

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Out[18]=
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$$\frac{\sin^5(x)}{5} - \frac{\sin^7(x)}{7}$$

■ 3.

$$\int \sin^2(x)\cos^2(x)\,dx$$

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Out[19]=
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$$\frac{x}{8} - \frac{1}{32}\sin(4x)$$

■ 4.

$$\int \frac{\cos^3(x)}{\sqrt{\sin(x)}}\,dx$$

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Out[22]=
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$$2\sin^{\frac{1}{2}}(x) - \frac{2}{5}\sin^{\frac{5}{2}}(x)$$

■ 5.

$$\int \sec^6(x)\tan^2(x)\,dx$$

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Out[24]=
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$$\frac{\tan^7(x)}{7} + \frac{2\tan^5(x)}{5} + \frac{\tan^3(x)}{3}$$

■ 6

$$\int \tan^4(x)\,dx \text{ Or (afternoon class) } \int \tan^6(x)\,dx$$

$$\frac{\tan^3(x)}{3} - \tan(x) + x \text{ OR (afternoon class)}$$

$$\frac{\tan^5(x)}{5} - \frac{\tan^3(x)}{3} + \tan(x) - x$$

■ 7

$$\int \sec^7(x)\tan^5(x)\,dx$$

Out[29]= $\frac{\sec^{11}(x)}{11} - \frac{2\sec^9(x)}{9} + \frac{\sec^7(x)}{7}$

■ 8

$$\int \sec^3(x)\,dx$$

$$\frac{1}{2}\left(\ln|\sec(x)+\tan(x)| + \sec(x)\tan(x)\right)$$

■ 9

$$\int \sec^6(x)\,dx$$

Out[45]= $\frac{\tan^5(x)}{5} + \frac{2\tan^3(x)}{3} + \tan(x)$

■ 10

$$\int \tan^2(x)\cos^3(x)\,dx$$

Out[48]= $\frac{\sin^3(x)}{3}$