7) $\int \sin^3 x \cos^2 x \, dx = \int \sin x \cdot \sin^2 x \cdot \cos^2 x \, dx =$

$\int (1 - \cos^2 x) \cdot \cos^2 x \cdot \sin x \, dx = \left\{ \begin{array}{l} t = \cos x \\ \sin x \, dx = dt \end{array} \right.$

$= \int (1 - t^2) t^2 \, dt = \int t^2 \, dt - \int t^4 \, dt = \frac{1}{3} \cos^3 x - \frac{1}{5} c$

8) $\int \sin^3 x \cos 5x \, dx = \int \frac{1}{2} \left(\sin(-2x) + \sin 8x \right) =$

$-\frac{1}{2} \int \sin 2x \, dx + \sin 8x \, dx = -\frac{1}{2} I_1 + I_2$

$I_1 = \int \sin 2x \, dx = \left\{ \begin{array}{l} t = 2x \\ dt = 2dx \end{array} \right\} = \frac{1}{2} \int \sin t \, dt = -\frac{1}{2} \cos$

$I_2 = \int \sin 8x \, dx = \left\{ \begin{array}{l} t = 8x \\ dt = 8dx \end{array} \right\} = \frac{1}{8} \int \sin t \, dt = -\frac{1}{8} c$

Odp. $\frac{1}{16} \cos 8x + \frac{1}{4} \cos 2x$

15) $\int \frac{dx}{4+\sin^2 x} = \left\{ \begin{array}{l} \sin^2 x = \frac{t^2}{1+x^2} \\ dx = \frac{dt}{1+t^2} \end{array} \right\} =$

$= \int \frac{\frac{dt}{1+t^2}}{4+\frac{t^2}{1+t^2}} = \int \frac{dt}{\frac{4+5t^2}{1+t^2}} \cdot (1+t^2) = \int \frac{dt}{4+5t^2} =$

$= \int \frac{dt}{4\left(1+\left(\frac{\sqrt{5}\,t}{2}\right)^2\right)} = \left\{ \begin{array}{l} k = \frac{\sqrt{5}\,t}{2} \\ dk = \frac{\sqrt{5}}{2} \cdot dt \end{array} \right\} =$

$= 4 \int \frac{dk}{1+k^2} \cdot \frac{2}{\sqrt{5}} = \frac{8}{\sqrt{5}} \operatorname{arctg} \frac{\sqrt{5}}{2} \operatorname{tg} \frac{x}{2}$

16) $\int \frac{\cos^3 x}{\sin^5 x} dx = \int \frac{\cos x (1-\sin^2 x)}{\sin^3 x} dx = \left\{ \begin{array}{l} t = \sin x \\ dt = dx \sin x \end{array} \right\} =$

$= \int \frac{(1-t^2)}{t^3} dt = \int \frac{1}{t^3} dt - \int \frac{t^2}{t^3} dt = -\frac{1}{4} (\sin x)^{-4} + \frac{1}{2} (\sin x)^{-2}$