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MATH F252, Dr. J. Gimbel, University of Alaska Fairbanks
Homework Set VI, Due Friday, February 17, 2023: §3.2 # 76, 86 §3.3 # 134, 138, 146

76. $\int \sin^7(2x)\cos(2x)dx$

$$\int \sin^7(2x)\cos(2x)dx$$
$$u = \sin(2x) \quad \frac{du}{2} = \cos(2x)dx$$
$$\Rightarrow \frac{1}{2}\int u^7 du = \frac{1}{2}\left(\frac{u^8}{8}\right) + C = \boxed{\frac{\sin^8(2x)}{16} + C}$$

86. $\int \sqrt{\sin x}\cos^3 x dx$

$$\int \sqrt{\sin x}\cos^3 x dx = \int \sqrt{\sin x}(1-\sin^2 x)\cos x dx$$