■ **Evaluate the following.**

[1] $\int (x^3 + 2)^4 \, x^2 \, dx$

[2] $\int (2\,x^4 + 5)^3 \, x^3 \, dx$

[3] $\int (2\,x^4 + 2\,x^3 + 5\,x^2 + 7\,x + 5)^3 \, (8\,x^3 + 6\,x^2 + 10\,x + 7) \, dx$

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

[5] $\int \tan 5\,\theta \sec^2 \theta \, d\theta$

[6] $\int \sec^3(x^2 + 2\,x) \sec(x^2 + 2\,x) \tan(x^2 + 2\,x) \, (x + 1) \, dx$

Answers

[1] $\frac{1}{15}\,(x^3+2)^5+C$

[2] $\frac{1}{32}\,(2\,x^4+5)^4+C$

[3] $\frac{1}{4}\,(2\,x^4+2\,x^3+5\,x^2+7\,x+5)^4+C$

[4] $\frac{-1}{6}\,\sin^2 3\,x+C$

[5] $\frac{1}{10}\,\tan^2 5\,\theta\,+C$

[6] $\frac{1}{8}\,\sec^4(x^2+2\,x)$