Integrating Powers of Trig functions "Answer Key"

1. $\int \sin^2(2\theta)\,d\theta = \frac{1}{2}\theta - \frac{1}{8}\sin(4\theta) + M$

2. $\int \cos^2(3\theta)\,d\theta = \frac{1}{2}\theta + \frac{1}{12}\sin(6\theta) + N$

3. $\int \sin^7\theta\,d\theta = \frac{-35}{64}\cos\theta + \frac{7}{64}\cos(3\theta) - \frac{7}{320}\cos(5\theta) + \frac{1}{448}\cos(7\theta) + O$

4. $\int \cos^5\theta \sin^2\theta\,d\theta = \frac{157}{840}\sin^3\theta + \frac{9}{70}\sin^3\theta\cos(2\theta) + \frac{1}{56}\sin^3(\theta)\cos(4\theta) + P$

5. $\int \cos^3\theta \sin^3\theta\,d\theta = \frac{1}{192}\cos(6\theta) - \frac{3}{64}\cos(2\theta) + Q$

6. $\int \sin^4 x\,dx = \frac{3}{8}x - \frac{1}{4}\sin(2x) + \frac{1}{32}\sin(4x) + R$

7. $\int \sec^6(2\theta)\,d\theta = \frac{4}{15}\tan(2\theta)\sec^4(2\theta) + \frac{1}{5}\cos(4\theta)\tan(2\theta)\sec^4(2\theta) + \frac{1}{30}\cos(8\theta)\tan(2\theta) + \sec^4(2\theta) + S$

8. $\int \tan^3\theta\,d\theta = \frac{1}{2}\sec^2(x) + \ln|\cos(x)| + T$

9. $\int \sec(3\theta)\,d\theta = \frac{1}{3}\ln\left|\sin\left(\frac{3}{2}x\right) + \cos\left(\frac{3}{2}x\right)\right| - \frac{1}{3}\ln\left|\cos\left(\frac{3}{2}x\right) - \sin\left(\frac{3}{2}x\right)\right| + U$

10. $\int \tan^4\theta \sec^4\theta\,d\theta = \frac{6}{35}\tan^5(x)\sec^2(x) + \frac{1}{35}\cos(2x)\tan^5(x)\sec^2(x) + V$

11. $\int \tan\theta \sec^3\theta\,d\theta = \frac{\sec^3(\theta)}{3} + W$

12. $\int \sec^4\theta \tan^5\theta\,d\theta = \frac{\sec^8(\theta)}{8} - \frac{\sec^6(\theta)}{3} + \frac{\sec^4(\theta)}{4} + A$

13. $\int \cos^4\theta \sin^4\theta\,d\theta = \frac{3}{128}\theta - \frac{1}{128}\sin(4\theta) + \frac{1}{1024}\sin(8\theta) + B$