

Integration by substitution 4
AB CALCULUS- Harter

Name _____

Integrate each

1. $\int \frac{\cos 2x}{\sin^3 2x} dx$

2. $\int_{\pi/8}^{3\pi/8} \cos 4x dx$

3. $\int \frac{x}{\sqrt{x+2}} dx$

4. $\int_1^2 x \sqrt[3]{x-1} dx$

5. $\int \frac{4x-6}{\sqrt{x^2-3x-4}} dx$

6. $\int \sec 2\theta \tan 2\theta d\theta$

7. $\int \frac{\sin\left(\frac{1}{x}\right)}{x^2} dx$

8. $\int \tan^4 x \sec^2 x dx$

9. $\int_2^6 \frac{dx}{\sqrt{2x-3}}$

10. $\int (5x+4)^5 dx$

11. $\int \sin^{10} x \cos x dx$

12. $\int \cos(2x+1) dx$

13. $\int \frac{(\sqrt{x}-1)}{\sqrt{x}} dx$

14. $\int_{-1}^1 \frac{x+1}{(x^2+2x+2)^3} dx$

15. $\int \left(1 + \frac{1}{a}\right)^3 \frac{1}{a^2} da$

16. $\int \frac{2}{\sqrt{3x-7}} dx$

17. $\int_1^4 \frac{1}{\sqrt{x}(\sqrt{x}+1)^2} dx$

Answers

1. $\frac{-1}{4\sin^2 2x} + C$

2. $-1/2$

3. $\frac{2}{3}(x-4)\sqrt{x+2} + C$

4. $33/28$

5. $4\sqrt{x^2-3x-4} + C$

6. $\frac{1}{2}\sec 2\theta + C$

7. $\cos \frac{1}{x} + C$

8. $\frac{1}{5}\tan^5 x + C$

9. 2

10. $\frac{1}{30}(5x+4)^6 + C$

11. $\frac{1}{11}\sin^{11} x + C$

12. $\frac{1}{2}\sin(2x+1) + C$

13. $\frac{2}{3}(\sqrt{x}-1)^3 + C$

14. $\frac{6}{25}$

15. $-\frac{1}{4}\left(1 + \frac{1}{t}\right)^4 + C$

16. $\frac{4}{3}\sqrt{3x-7} + C$

17. $\frac{1}{3}$