Homework 3

Due Monday, January 27, 2020

1. (2 points) Evaluate $\int_1^5 f$ where
$$f(x) = \begin{cases} x^2, & 1 \le x \le 3 \\ 4x+1, & 3 < x \le 5 \end{cases}$$

2. (1 point) $\int_0^1 (2x-3)\,dx$

3. (1 point) $\int_1^4 \frac{2\,dx}{\sqrt{x}}$

4. (1 point) $\int_0^1 6\sqrt[4]{x}\,dx$

5. (1 point) $\int 3\sin x\,dx$

6. (1 point) $\int_{\pi/6}^{\pi/4} \csc(x)\cot(x)\,dx$

7. (1 point) $\int \left(\frac{2}{\pi}x - 2\sec^2(x)\right)\,dx$

8. (1 point) $\int_1^3 \left(x^2 - \frac{1}{x^2}\right)\,dx$

9. (1 point) $\int_0^1 \frac{x+3}{\sqrt{x+1}}\,dx$

10. (1 point) $\int \frac{dx}{\sqrt{2x+1}}$

11. (1 point) $\int \frac{s\,ds}{(1+s^2)^3}$

12. (1 point) $\int \sqrt{1+\sin(x)} \cdot \cos(x)\, dx$

13. (1 point) $\int_0^1 x(x^2+1)^3\, dx$

14. (2 points) $\int \dfrac{\sec^2(x)}{\sqrt{1+\tan(x)}}\, dx$

15. (2 points) $\int_{\pi/4}^{\pi/2} \csc(x)\left(\cot(x) - 3\csc(x)\right)\, dx$

16. (2 points) $\int \sec^5(x)\tan^3(x)\, dx$ *Hint: Use the Pythagorean Identity.*