Integrals and Natural Logarithms #5 - Answers

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Instructions

Solutions appear on the SOLUTIONS page.

1. $\int \left(2x^5 - 6x^3 + 4x + 8\right) dx = \frac{1}{3}x^6 - \frac{3}{2}x^4 + 2x^2 + 8x + C$

2. $\int \left(6\sec^2(x) - 3\csc^2(x)\right) dx = 6\tan(x) + 3\cot(x) + C$

3. $\int_{x=-2}^{x=0} \left(3x^2 + 3x + 3\right) dx = 8$

4. $\int \frac{\left(4x^3+3\right)}{\sqrt{3x^4+9x}} dx = \frac{2}{3}\left(3x^4 + 9x\right)^{\frac{1}{2}} + C$

5. $\int \sec^2\left(2x^2 + 1\right)\, x\, dx = \frac{1}{4}\tan\left(2x^2 + 1\right) + C$

6. $\int \frac{\sec^2(x)}{\tan(x)} dx = \ln|\tan(x)| + C$

7. $\frac{d}{dx}\left[\ln\left(\cot(x) + 3\right)\right] = -\frac{\csc^2(x)}{\cot(x)+3} =$

8. $\frac{d}{dx}\left[\ln\left(2x^2 + 6x - 3\right)\right] = \frac{4x+6}{2x^2+6x-3}$

9. $\frac{d}{dx}\left[\ln\left(\sin(x)\sqrt{x^2-1}\right)\right] = \frac{\cos(x)}{\sin(x)} + \frac{x}{x^2-1} = \cot(x) + \frac{x}{x^2-1}$

10. $\int_{x=0}^{x=2} \sqrt{x^3+1}\, x^2\, dx = \frac{52}{9}$