Integrals and Natural Logarithms #7 - Answers

FALL 2019

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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. $\int \left(5\cos\left(x\right) - 7\sec^2\left(x\right)\right) dx = 5\sin\left(x\right) - 7\tan\left(x\right) + C$
3. $\int_{x=0}^{x=2} \left(8x^3 + 9x^2 + 2x\right) dx = 60$
4. $\int \left(x^3 + x^2\right)^4 \left(21x^2 + 14x\right) dx = \frac{7}{5}\left(x^3 + x^2\right)^5 + C$
5. $\int \sin\left(\sec\left(x\right)\right) \sec\left(x\right) \tan\left(x\right)\, dx = -\cos\left(\sec\left(x\right)\right) + C$
6. $\int \frac{6x^2+3x+3}{(4x^3+3x^2+6x)} dx = \frac{1}{2}\ln\left|4x^3 + 3x^2 + 6x\right| + C$
7. $\frac{d}{dx}\left[\ln\left(\sin\left(x\right) + \cos\left(x\right)\right)\right] = \frac{\cos(x)-\sin(x)}{\sin(x)+\cos(x)}$
8. $\frac{d}{dx}\left[\ln\left(8x^2 - 7x + 5\right)\right] = \frac{16x-7}{8x^2-7x+5}$
9. $\frac{d}{dx}\left[\ln\left(\sqrt{\sin\left(x\right)\cos\left(x\right)}\right)\right] = \frac{1}{2}\left(\cot\left(x\right) - \tan\left(x\right)\right)$
10. $\int_{x=0}^{x=3} \sqrt{x+1}\, dx = \frac{14}{3}$