Homework 8

MA 123 A2, Summer I 2010

Be first to report a math error for extra credit.

Read Stewart sections 5.4, 5.5. Alternatively, read about substitution and FTC here. Both sources contain ample selections of practice exercises.

Exercise 1. Find $\int x \sin(x^2) dx$.

$C + (_2x)\text{soc}\,\frac{1}{2}-$

Exercise 2. Find $\int (3x-2)^{20} dx$.

$C + {}_{12}(2 - x\varepsilon)\frac{1}{63}$

Exercise 3. Find $\int \sin(\pi t) dt$.

$C + (\imath\pi)\text{soc}\,\frac{1}{\pi}-$

Exercise 4. Find $\int \frac{(\ln x)^2}{x} dx$.

$C + {}_{\varepsilon}(x\,\text{ul})\frac{1}{3}$

Exercise 5. Find $\int \frac{dx}{5-3x}$.

$C + |x\varepsilon - 5|\,\text{ul}\,\frac{1}{3}-$

Exercise 6. Find $\int e^x \cos(e^x) dx$.

Exercise 7. Find $\int \frac{z^2}{z^3+1} dz$.

Exercise 8. Find $\int e^x \sqrt{1+e^x} dx$.

$C + \frac{2}{3}(1+e^x)^{\frac{3}{2}}$

Exercise 9. Find $\int (x^2+1)(x^3+3x)^4 dx$.

$C + \frac{1}{15}(x^3+3x)^5$

Exercise 10. Find $\int \frac{1+x}{1+x^2} dx$.

$C + \frac{1}{2}\ln(1+x^2) + \tan^{-1} x$

Exercise 11. Find $\int_0^1 \cos(\pi t/2) dt$.

$\frac{2}{\pi}$

Exercise 12. Find $\int_0^1 \sqrt[3]{1+7x} dx$.

$\frac{45}{28}$

Exercise 13. Find $\int_0^1 x^2(1+2x^3)^5 dx$.

$\frac{182}{9}$

Exercise 14. Find $\int_1^4 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$.

$2(e^2 - e)$

Exercise 15. Find $\int_1^2 x\sqrt{x-1} dx$.

$\frac{16}{15}$

Exercise 16. Find $\int_0^1 \frac{e^z+1}{e^z+z} dz$.

$\ln(e+1)$

Exercise 17. Find $\int_0^{\sqrt{\pi}} x\cos(x^2)dx$.

Exercise 18. Find $\int_0^a x\sqrt{a^2-x^2}dx$.

Exercise 19. Find $\int_0^{\frac{1}{2}} \frac{\sin^{-1}x}{\sqrt{1-x^2}}dx$.