

Spring 2013 Math 152

Week in Review 4
courtesy: Amy Austin
(covering section 8.3-8.9)

Section 8.3

1. $\int \frac{2}{x\sqrt{x^2-4}} dx$
2. $\int_0^{1/3} \frac{3}{\sqrt{1+9y^2}} dy$
3. $\int \frac{dx}{\sqrt{x^2+4x+8}} dx$
4. $\int \sqrt{1-4x^2} dx$

Section 8.4

5. $\int \frac{x+2}{x^2-2x-15} dx$
6. $\int \frac{x^4+x-4}{x^2-1} dx$
7. $\int_1^2 \frac{dx}{x(x^2+2x+1)}$
8. $\int \frac{3x^2-4x+5}{(x-1)(x^2+1)} dx$

Section 8.9

9. Determine whether the following improper integrals converge or diverge. If it converges, find the value of the integral. If it diverges, explain why.

- a.) $\int_1^{\infty} \frac{1}{x} dx$
- b.) $\int_1^{\infty} \frac{1}{x^2} dx$
- c.) $\int_e^{\infty} \frac{1}{x(\ln x)^4} dx$
- d.) $\int_{-\infty}^{\infty} \frac{dx}{x^2+9}$

e.) $\int_0^2 \frac{1}{x} dx$

f.) $\int_{-3}^0 \frac{dx}{(x+3)^2}$

g.) $\int_0^3 \frac{1}{2x-1} dx$

10. Determine whether the following integrals converge or diverge using the comparison theorem:

a.) $\int_1^{\infty} \frac{1}{x+e^{5x}} dx$

b.) $\int_2^{\infty} \frac{x+1}{x^{3/2}-x} dx$

c.) $\int_1^{\infty} \frac{\cos^2 x}{x^4} dx$