

My Office Hours: M & W 2:30–4:00, Tu 2:00–3:30, & F 1:30–2:30 or by appointment. **Math**

Intern: Sun: 2:00–5:00, 7:00–10pm; Mon thru Thu: 3:00–5:30 and 7:00–10:30pm in Lansing 310.

Website: <http://math.hws.edu/~mitchell/Math131F15/index.html>.

☛ Practice

Today we will finish improper integrals. Our next topic will be Sequences.

1. Make a last review Section 7.8 on improper integrals. Review the p -Power Theorem in your notes. This theorem will be useful in the next few weeks.
2. **Read Section 8.1** on Sequences. They are lot's of fun. We start them on Monday.
3. Practice Problems on page 578: #35, 43, 45, and 51.
4. Practice Problems on page 593: #35, 37.

Hand In

- o. Finish WeBWork Day 28-15 and start Day 29B.

1.(a) Determine $\int \frac{8}{x^2 + 2x - 3} dx$.

(b) Using your work in part (a) determine $\int_2^{\infty} \frac{8}{x^2 + 2x - 3} dx$. Use proper notation.

(c) Determine $\int_0^1 \frac{8}{x^2 + 2x - 3} dx$. Use proper notation.

2. Evaluate each of these integrals by using the p -Power Theorem. You should not need to do any antidifferentiation. LOOK CAREFULLY!

(a) $\int_1^{\infty} \frac{1}{x^{5/4}} dx$ (b) $\int_1^{\infty} \frac{1}{x^{2/3}} dx$ (c) $\int_1^{\infty} \frac{2}{x^7} dx$ (d) $\int_1^{\infty} \frac{1}{x^{-15}} dx$

3.(a) Determine $\int \frac{4x^3}{(1+x^4)^2} dx$.

(b) You need to do one example of an improper integral on $(-\infty, \infty)$. Re-use your work in part (a) to determine: $\int_{-\infty}^{\infty} \frac{4x^3}{(1+x^4)^2} dx$. Use the correct limit process.

4. These three should be pretty quick. Use correct limit notation.

(a) $\int_3^4 \frac{1}{(x-3)^{3/2}} dx$ (b) $\int_3^4 \frac{1}{(x-3)^{2/3}} dx$ (c) $\int_0^{\pi/2} \sec x \tan x dx$

5. Determine whether each of the following integrals is improper or not. If it is improper, say that and just rewrite it using the correct limit expression. DO NOT ANTIDIFFERENTIATE IT OR EVALUATE IT. For example, $\int_2^4 \frac{x}{x-4} dx$ is IMPROPER: $\lim_{b \rightarrow 4^-} \int_2^b \frac{x}{x-4} dx$. If it is proper, just write "PROPER" and do no more work.

(a) $\int_1^3 \frac{x-3}{x^2+3x-4} dx$ (b) $\int_1^3 \frac{x-3}{x^2+4} dx$ (c) $\int_1^3 \frac{-3}{x-2} dx$

6. Bonus: After reading section 8.1 try page 605 #28 and 30.