

Spring 2005 Math 152
Final Exam Review Exercises -
Solutions

courtesy: Amy Austin

Review Exercises: Sections 7.1-11.3

1. $\frac{1}{12}$
2. $\frac{32}{3}$
3. a.) 8π
b.) $\frac{16\pi}{3}$
c.) 18π
d.) $\frac{\pi}{6}$
e.) $\frac{8\pi}{15}$
f.) 2
4. 10,000 foot pounds
5. 5π foot pounds
6. 450 foot pounds
7. 10
8. $\frac{e^2 + 1}{4}$
9. $16/3 \ln 4 - 28/9$
10. $\frac{\pi + 6 - 3\sqrt{3}}{6}$
11. $\frac{\pi}{2}$
12. $\frac{\sec^3 x}{3} + C$
13. $\frac{8}{15}$
14. $\frac{2}{15}$
15. $\ln(1 + \sqrt{2})$
16. $\sqrt{x^2 - 4} - 2\sec^{-1}(x/2) + C$
17. $\frac{\pi}{4}$
18. $\ln \frac{4}{3}$
19. $\ln \frac{x}{x+1} + \frac{1}{x+1} + C$
20. $\arctan x + \frac{1}{x+1} + C$
21. $M_4 = 2.014207, T_4 = 2.031893, S_4 = 2.020651$
22. $\frac{1}{8}$
23. a.) Diverges
b.) Diverges
c.) Converges to $\frac{1}{2}$
24. $\ln(e^2 + e - 1)$
25. $10 - 10e^{-0.6}$ kg of salt
26. $y = \frac{2x^{3/2} + 2}{1 + x^2}$
27. $\frac{61}{216}$
28. $\frac{1}{27}(80\sqrt{10} - 13\sqrt{13})$
29. a.) $\frac{2\pi}{3}(17\sqrt{17} - 1)$
b.) $2\pi\sqrt{5}$
c.) $\sqrt{5}\pi$
d.) 4.936
30. $\left(\frac{1}{e-1}, \frac{e+1}{4}\right)$
31. 5.27×10^5 Newtons
32. 0
33. a.) $3/4$
b.) $1/7$
c.) diverges to $-\infty$
34. a.) C Integral Test
b.) C Limit Comparison Test or Comparison Test
c.) C Comparison Test
d.) C Alternating Series Test
e.) C Ratio Test
35. a.) $s_3 = 1 + 1/16 + 1/81, |R_3| < .0123456$
b.) $s_2 = 1, |R_2| < 4/3$

36. a.) $R = 2, I = [-5, -1)$

b.) $R = \infty, I = (-\infty, \infty)$

c.) $R = 0, I = \{\frac{2}{3}\}$

37. $\sum_{n=0}^{\infty} \frac{(-1)^n (3x)^{2n+1}}{2n+1}, R = \frac{1}{3}$

38. $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!(4n+2)2^{4n+2}}$

39. $T_2(x) = 10 + 1/20(x - 100) - 1/8000(x - 100)^2$.
 $|R_n(x)| \leq 6.41 \times 10^{-7}$.

40. $\langle \frac{-1}{\sqrt{2}}, 0, \frac{-1}{\sqrt{2}} \rangle$

41. $\langle 12, 8, 1 \rangle$

42. 5

43. a.) $\langle -6, 1, -4 \rangle$

b.) 46°

c.) $\frac{\sqrt{53}}{2}$

YEAH! I'm finally done. I wish you all the best for your final exams. Have a safe and fun summer

-Amy Austin