

Some Answers to Dr. Z's Math 152 Review Problems for Final Exam, Fall 2005

1. Can't give the answer without giving away the solution.
2. $y = \frac{3\pi}{2}x + 2 - \frac{3\pi}{2}x$, $y = \frac{-3\pi}{2}x + 2 + \frac{3\pi}{2}x$,
3. $y = 8e^{x-3}(x-2)/(x-1)$, $1 < x < \infty$.
4. (a) $1/2$ (b) $\pi/4$ (c) $\pi/2$
5. (a) $\frac{1}{2}e^x(\sin x - \cos x) + C$
(b) $-x(\sqrt{9-x^2})^3/4 + 9x\sqrt{9-x^2}/8 + \frac{81}{8}\sin^{-1}(x/3) + C$
(c) $\frac{x+3}{2}\sqrt{x^2+6x+10} + \frac{1}{2}\ln(x+3+\sqrt{x^2+6x+10}) + C$
6. (a) ∞ (b) $8/105$.
7. $-1/4 + 3\pi/32$
8. (a) $29/9$ (b) $211/900$ (c) $374/333$
9. $5/4$; $10\sqrt{2}$.
10. 9 hours.
11. Can't give the answer without giving away the solution.
12. $T_3(x) = 2 - 3(x-1) + \frac{5}{2}(x-1)^2 - \frac{1}{6}(x-1)^3$;
 $f(0.8) \approx 1013/375 = 2.7013333$; $|error| \leq 1/1500$;
 $B = (3/125)^{1/4}$.
13. (a) $a_0 = 1, a_1 = 5/2, a_2 = 23/8$; (b) $b_0 = 1, b_1 = -3/2, b_2 = 7/8$;
14. (a) $a_0 = 1, a_1 = 0, a_2 = 1/2, a_3 = 0$; (b) $b_0 = 1, b_1 = 0, b_2 = 3/2, b_3 = 0$;
15. $e - (e/2)x^2 + (e/6)x^4 + \dots$
16. Can't give the answer without giving away the solution.
17. (a) cond. conv. (b) cond. conv. (c) abs. conv. (d) abs. conv
18. Can't give the answer without giving away the solution.
19. (a) $\ln(4/3)$ (b) $1/9$.
20. 1.
21. (a) $R = 1$, interval of convergence = $(-1, 1]$, interval of absolute convergence = $(-1, 1)$.
(b) $R = 2$, interval of convergence = $[-3, 1)$, interval of absolute convergence = $(-3, 1)$.