

## Answer Key

### Math 1272 Fall 2004 Final Exam

#### Multiple Choice Problems

1. B
2. B (E plausible)
3. D
4. D
5. D
6. C
7. A
8. C
9. E
10. C
11. C
12. C
13. E
14. B

#### Written Answer Problems

15.
  - a)  $\frac{1}{6}\cos^3(2x) - \frac{1}{2}\cos(2x) + C$  (among other forms)
  - b)  $\ln|1 + \ln|x|| + C$
16.  $(\pi/12) \cdot [\sin 0 + 2 \cdot \sin(\pi^2/36) + 2 \cdot \sin(\pi^2/9) + 2 \cdot \sin(\pi^2/4) + 2 \cdot \sin(4\pi^2/9) + 2 \cdot \sin(25\pi^2/36) + \sin(\pi^2)]$
17.
  - a)  $y = Ae^{\frac{1}{3}x^3}$  (trivial solution:  $y = 0$ );  
 $y = 3e^{\frac{1}{3}(x^3-1)}$
  - b)  $y = -\frac{1}{2}\cos(x^2) + C$
18. interval of convergence:  $(-\frac{1}{4}, \frac{1}{4}]$
19.
  - a) diverges (by Integral Test or by "p-test" and Limit Comparison Test)
  - b) converges (by Integral Test)
20.  $\sin \theta = (5 \cdot \sqrt{22})/33$