

**Fall 2007 Math 151**  
**Sample Exam 3 Review**  
**Exercises - Answers**

1. e
2. c
3. d
4. a
5. e
6. c and d
7. d and e
8. c
9. b
10. a
11. a
12. a
13. e
14. b
15. a
16. a
17.  $y' = x^{\sec x}(\sec x \tan x \ln x + \frac{\sec x}{x}) + (\ln 2)2^{\arcsin x} \frac{1}{\sqrt{1-x^2}}$
18.  $e^{-5}$
19.  $f(x)$  is increasing on the interval  $(0, \frac{\pi}{6})$   
and  $(\frac{5\pi}{6}, 2\pi)$
20.  $f$  is concave up on the interval  $(-\frac{1}{2}, \infty)$ ;  
 $f$  is concave down on the interval  $(-\infty, -\frac{1}{2})$ ; Point of inflection at  $(-\frac{1}{2}, -\frac{1}{2e^2})$ .
21. The dimensions of the largest rectangle are  $2\sqrt{2}$  by  $2\sqrt{2}$ , hence it is a square.
22. The position of the particle at time  $t$  is  
 $\mathbf{s}(t) = (t^2/2 + e^t - 1)\mathbf{i} + (2 - \cos t)\mathbf{j}$ .
23.  $\infty$
24. There are  $\frac{1000}{e}$  bacteria present after 3 minutes (round to the nearest bacteria).
25. a.)  $\frac{\pi}{3}$   
b.)  $\frac{3}{5}$   
c.)  $-\frac{\pi}{4}$   
d.)  $1 \leq x \leq \frac{3}{2}$   
e.)  $x > 0$