Math 1297, Calculus II

Test 1 answers as of May 4, 2007

1. $\frac{\ln(\log_{10}(2))}{10}$
2. (a) $e^{x^2+1}2x$
   (b) $\frac{1}{\sqrt{1-(10^\theta)^2}}10^\theta(\ln(10))$
   (c) $(\frac{\sin(x)}{x}+\cos(x)\ln(x))(x^{\sin(x)})$
3. Partial answer: the angle between the vectors should be more than $90°$.
4. $\sqrt{50}$
5. $\frac{x-3}{4}=\frac{y+2}{4}=\frac{z-1}{6}$
6. D
7. reflect across the line $y=x$.
8. C
9. $<-13,-7,3>\cdot<x-2,y,z>=0$
10. (a) True
    (b) True
    (c) False
    (d) False
    (e) False
    (f) False
    (g) True
    (h) True
11. $\frac{1}{2}\ln|r^2-5|+C$
12. See p. 481, or start with $\tan(\arctan(x))=x$, differentiate, solve for $\arctan'(x)$, and draw a triangle to substitute x^2+1 for $\sec^2(\arctan(x))$.
13. See p. 445
14. The line of intersection is perpendicular to both normal vectors, so a direction vector for the line can be obtained by taking the cross product of the two normal vectors.