Answers to Exam IA Fall 2003

1. B
2. A
3. A
4. A
5. E
6. D
7. D
8. D
9. E (NOT TESTED ON THIS EXAM)
10. B
11. D

12a) $\lim_{x\to a}\cdots$ or $\lim_{h\to 0}\cdots$
b) $-\dfrac{1}{2}$ (must use limit above)

13a) $\dfrac{-2}{\sqrt{10}}$
b) $\left\langle -\dfrac{2}{10}, \dfrac{6}{10}\right\rangle$

14. $y-3=-4(x-1)$

15a) $\dfrac{(2x^2-4x)(3)-(3x+6)(4x-4)}{(2x^2-4x)^2}$
b) $(4-6x+7x^2)(2-3x^2+4x^3)+(-6+14x)(2x-x^3+x^4)$

16. $\dfrac{3}{2}$

17. $\dfrac{4}{3}$ makes limit exist and equal to $f(3)=8$

18a) If f is cts on $[a,b]$ and N is between $f(a)$ and $f(b)$, then there is a $c\in(a,b)$ such that $f(c)=N$
b) Let $f(x)=x^3-x-1$ and $N=0$. f is a polynomial, so it is continuous. Let $a=1$ and $b=2$. $f(a)=-1<0$ and $f(b)=5>0$, so by the IVT, there is a c between 1 and 2 for which $f(c)=0$, i.e., c is a solution to the equation.