

MATH 140A
Spring 2003
Exam I
February 18, 2003

ANSWERS:

1. (b); 2. (a); 3. (d); 4. (a); 5. (c); 6. (d); 7. (c); 8. (c); 9. (b); 10. (a).

11. a. (T); b. (F); c. (F); d. (F); e. (T); f. (T); g. (T); h. (F).

12. a. $f'(x) = \frac{\sin^2(x)[9x^2 - 8x - 1] - 2(3x^3 - 4x^2 - x + 3)\sin(x)\cos(x)}{\sin^4(x)}$

b. $f'(x) = 5 \cos^4(\tan(2x^2 - x)) \cdot [-\sin(\tan(2x^2 - x))] \sec^2(2x^2 - x) \cdot (4x - 1)$

13. Infinity discontinuity at $x = 0$; Removable discontinuity at $x = 2$; Jump discontinuity at $x = 3$; Infinity discontinuity at $x = 5$; ($x = -1$ is not a discontinuity: it is not within the domain of the given part of the function.)

14. a. $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$

b. $f'(x) = \frac{a}{2\sqrt{ax+b}}$