MAT 1330 B

University of Ottawa, Fall 2009

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Topics: Sections 1.5, 1.6, 1.7, 1.8, 2.2, 2.3, 2.1, 2.4, 2.5, 2.6, 2.8, 2.9, 2.10, 3.1, 2.7, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 4.1, 4.2, 4.3, 4.4, 4.5

Suggested Exercises 1.5: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 37, 39, 53, 57;

1.6: 1, 3, 5, 7, 9, 11, 17, 19, 21, 25, 27, 29, 31, 33, 41, 47;

3.1: 27, 29;

1.7: 1, 3, 5, 7, 9, 23, 25, 27, 29, 33, 35, 37, 39, 43, 47, 49;

1.8: 1-13, 29, 33, 35, 37, 41;

2.2:1, 3, 5, 7, 13, 15, 17, 19, 21, 23, 37;

2.3: 11, 13, 15, 17, 19, 29, 31;

2.1: 1, 3, 5, 7, 9, 11, 13, 15, 17, 27, 29, 37, 39, 41;

2.4: , 5, 7, 9, 11, 13, 15, 17, 19, 21, 31, 33;

2.5: 1-29 (odd numbers), 37;

2.6: 1-12 (odd), 17, 23, 25, 27, 29, 31, 33, 35;

2.8: 1-7, 17, 25 (first derivatives only);

2.9: 1-29 (odd), 35, 37, 39;

2.10: 1-25 (odd), 47;

3.1: 5-12 (odd), 23, 25, 29, 31, 33, 35, 37;

3.2: 1-17 (odd), 19, 21, 27, 29;

2.7: 1-8, 11-26, 33, 35, 41, 45;

3.3: 1-21;

3.4: 1-23;

3.5: 1-8, 25-30;

3.6: Apply L'Hopital's rule to the functions provided in 7-22;

3.7: 1-12, 21-26, 35-38;

3.8: 1-8, 25, 26;

4.1: 1-12;

4.2: 1-20, 27-30;

4.3: 1-24, 29, 31-38, 43-46;

Here I post some solved exercises from your text!

11/page 163 - Sect: 2.3 $\lim_{t\to 5} 5t+6 = (5\times 5)+6 = 31$; $l(5.1) = 5(5.1)+6 = 31.5$, $l(5.01) = 5(5.01)+6 = 31.05$, $l(4.9) = 5(4.9)+6 = 30.5$, $l(4.99) = 5(4.99)+6 \approx 30.95$.

24/page 163 - Sect: 2.3 We have: $20 - 0.1 < f(x) < 20 + 0.1$; $19.99 < 5x^2 < 20.01$; $\frac{19.99}{5} < x^2 < \frac{20.01}{5}$; $\sqrt{\frac{19.99}{5}} < x < \sqrt{\frac{20.01}{5}}$, so we obtain: $1.00049 < x < 2.00049$.

26/page 163 Look first at the graph! Any value of $x < 0$ will give us a value within the tolerance, BUT NO positive x, however small, will produce an output within the tolerance (Note: $0 + 0.1 < 1$)!

37. We solve: $0.5 - 0.02 < T_{10} < 0.5 + 0.02$; so $0.48 < T_{10} < 0.52$, $0.48 < (0.5)T_9 < 0.52$, $\frac{0.48}{0.5} < T_9 < \frac{0.52}{0.5}$, $0.96 < T_9 < 1.04$. Hence the tolerance is $0.04g/L$. (Just compute the distance from the middle of the interval to one of the endpoints!)

10/page 153 Sect 2.2: $\lim_{x\to 0} 3\frac{\sin x}{x} + 4 = 3\lim_{x\to 0}\frac{\sin x}{x} + \lim_{x\to 0} 4 = (3 \times 1) + 4 = 7$, where we used:

2/page 153 $\lim_{x\to 0}\frac{\sin x}{x} = 1$.

1/page 153 $\lim_{x\to 0}(1+x)^{\frac{1}{x}} = e$. So

12/page 153 $\lim_{x\to 0}\frac{(1+x)^{\frac{1}{x}}}{x^x} = \frac{\lim_{x\to 0}(1+x)^{\frac{1}{x}}}{\lim_{x\to 0} x^x} = \frac{e}{1} = e$.

3/page 153 $\lim_{x\to 0}\frac{1-\cos(x)}{x} = 0$.

9/page 153 $\lim_{x\to 0} 5(1+x)^{\frac{1}{x}} = 5\lim_{x\to 0}(1+x)^{\frac{1}{x}} = 5 \times e = 5e$.