

MATH 122: Calculus II  
*Some Notes on Assignment 8*  
**I: Section 6.2: 44, 51**

**Exercise 44 :** Using the properties that  $\ln \frac{AB}{C} = \ln A + \ln B - \ln C$  and  $\ln A^n = n \ln A$ .

**Exercise 51:** Use the product rule to find the derivative of the second term: velocity  $s'(t)$  simplifies to  $-c \left( \ln \frac{m_1+m_2-bt}{m_1+m_2} \right)$  and the acceleration  $= s''(t) = \frac{bc}{m_1+m_2-bt}$

(a) Initial velocity  $= 0$ , initial acceleration  $= s''(0) = \frac{bc}{m_1+m_2}$

(b) Burnout:  $s' \left( \frac{m_2}{b} \right)$

**II: Section 6.3: 20, 25, 32**

**Exercise 20:** 1.

**Exercise 25:** Use Product Rule on  $f(x) = e^{3x} \tan \sqrt{x}$

**Exercise 32:** Implicit differentiation.

$$y' = \frac{e^y + 2}{\frac{1}{y+1} - xe^y}$$

**III: Section 6.4: 1, 7, 14**

**Exercise 1:** Let  $u = 2x + 7$  . Answer is  $\ln \sqrt{3}$

**Exercise 7:** Let  $u = \cos 2x$  Indefinite integral is  $-\frac{1}{2} \ln |\cos 2x| + C$ .  
Definite integral has value  $\frac{\ln 2}{4}$ .

**Exercise 14:** Let  $u = (2 + \ln x)$