

A. Due at the start of class on Day 16 (but not collected): Complete these exercises, just to practice basic skills. If you want more practice, then do more problems from the book.

Section 15.1 Exercises 11, 28-31, 44

B. Due at the start of class on Day 17, as part of your weekly homework packet: Submit polished solutions, including all necessary work and no unnecessary work, in the order assigned.

1. Section 15.1 Exercise 38

2. Section 15.1 Exercise 50. (This problem looks scary, but it's not extremely difficult, if you keep your notation straight.)

3. Richard Feynman (1918-1988) was one of the most successful (and colorful) physicists of the 20th century. In his memoirs, he gleefully revealed his favorite mathematical trick: "differentiation under the integral sign". In the simplest version, it is simply pushing a differentiation inside an integral with respect to a different variable:

$$\frac{d}{dx} \int_a^b f(x, y) dy = \int_a^b \frac{\partial}{\partial x} f(x, y) dy.$$

Use differentiation under the integral sign to compute $\frac{d}{da} I(a)$, where $I(a)$ is defined at the start of Exercise 53. Does your answer agree with the conclusion of Exercise 53E, that $I(a) = \log a$ (the natural logarithm)?