

Instructions: Please work the following problems on other pieces of paper. You must show all work and calculations in order to receive full credit. I would prefer to collect your assignments in class on the day it is due, but I will accept it as late as 5:00 PM on the due date. Assignments submitted later will receive 50% credit.

1. Section 6.1 # 18.
2. Section 6.1 # 28.
3. Section 6.1 # 38.
4. Section 6.1 # 50.
5. Section 6.1 # 60.
6. Suppose a rocket is being launched from a platform 10 feet high with an initial velocity of 60 feet per second. With this information alone, we can determine how high the rocket is in the air t seconds after it is launched.
 - (a) The acceleration due to gravity is -32 feet per second per second. If we let $a(t)$ denote the acceleration function, we have that $a(t) = -32$. The velocity function, denoted by $v(t)$, is given by $v(t) = \int a(t) dt$. Since the initial velocity is 60 feet per second, we have that $v(0) = 60$. Using this information, recover the velocity function for the rocket.
 - (b) The position of the rocket, denoted by $s(t)$, is given by $s(t) = \int v(t) dt$. Since the rocket is being launched from a platform 10 feet high, $s(0) = 10$. Use this information with the velocity function found in part (a) to recover the position function for the rocket.
7. Section 6.2 # 16(a). Draw a picture of the graph and the rectangles.
8. (a) Section 6.2 # 34.

(b) Section 6.2 # 46. The area of a trapezoid is (average length of bases) \cdot (height).
9. Use a known geometric formula to compute $\int_0^4 \sqrt{16 - x^2} dx$. Draw a sketch of the region and shade it in.
Hint: Set $y = \sqrt{16 - x^2}$, square both sides, then add x^2 to both sides. The equation should look familiar.
10. Section 6.3 # 14.
11. Section 6.3 # 22.
12. Section 6.3 # 36.
13. Section 6.3 # 58.