1. Section 6.1; Page 430; Problems: 4, 7, 14, 20, 22, 25, 28, 39, 50

2. Section 6.2; Page 436; Problems: 2, 4, 7, 9, 14, 15, 17, 30, 32, 36

Problem 6.1.4 \(10x - x^3 + C\)

Problem 6.1.25 \(\int \left( \frac{x - 1}{x} \right) dx = \int \frac{x}{x} dx - \int \frac{1}{x} dx = \int 1 dx - \int \frac{1}{x} dx = x + \ln |x|\).

Problem 6.1.50 Since the rate of change of tuition is defined by \(f(t) = -0.14t + 225\) then the function that gives us what tuition actually is, is the antiderivative \(F(t) = -0.14t^2/2 + 225t + C = -0.07t^2 + 225t + C\) with \(t\) the number of years since 1996. We know in 2001 tuition was $5442 so \(F(5) = -0.07(5^2) + 225(5) + C = 5442 \Rightarrow C = 5442 + 0.07(25) - 225(5) = 4318.75\) so our tuition function is \(F(t) = -0.07t^2 + 225t + 4318.75 \Rightarrow F(11) = -0.07(121) + 225(11) + 4318.75 = 6802.22\) is the average cost of tuition 11 years after 1996, i.e. 2007.

Problem 6.2.9 Let \(u = x^3 + 1 \Rightarrow du = (3x^2)dx \Rightarrow dx = \frac{du}{3x^2} \Rightarrow \int e^{x^3+1} x^2 dx = \int e^u x^2 \frac{du}{3x^2} = \frac{1}{3} \int e^u du = \frac{1}{3} e^u = \frac{1}{3} e^{x^3+1}\).

Problem 6.2.32 Let \(u = 5x^2 - 2 \Rightarrow du = 10x dx \Rightarrow dx = \frac{du}{10x} \Rightarrow \int \frac{x}{5x^2 - 2} dx = \int \frac{u}{10x} dx = \frac{1}{10} \int du = \frac{1}{10} u = \frac{1}{10} (5x^2 - 2)\).