

Math 205

Assignment #2

Due: January 23, 2015

1. Sketch and find the area formed by the line $x = 0$, $x = 2$ and the curves $y = \sqrt{x+2}$ and $y = \frac{1}{x+1}$. (5 marks)
2. Sketch and find the area formed by the intersection the curves $y = 2x - x^2$ and $y = x^3$ (5 marks)
3. Question #11, pg 420 from the 6th edition of your text – Hughes-Hallett or HH (5 marks)
4. Question #16, pg 447 from the 6th edition of HH (5 marks)
5. Sketch the region between the y-axis, the line $y = 2$ and the graph $y = 2x^2$. Find the area of this region in the following two ways:
 - a. Use a Riemann sum built from vertical slices and find the corresponding integral for this area
 - b. Use a Riemann sum built from horizontal slices and find the corresponding integral for this area
 - c. Part b should suggest that you could have integrated directly by simply considering y to be the independent variable and by integrating the function $x = \sqrt{\frac{1}{2}y}$. Show how this works and comment on the relationship between $y = 2x^2$ and $x = \sqrt{\frac{1}{2}y}$. (10 marks)

6. Shown below are two coloured regions formed by the graphs of $y = x^2$, $y = 2x^2$ and a “mystery equation” C. For any point P along the middle curve $y = 2x^2$ the two regions (A and B) have the same area. Find an equation for curve C that makes this true. (10 marks)

