MATH 1210: Midterm 3 Practice Answers

Some of the practice problems were taken from the Midterm 3 Practice Problems when I taught this class in Summer 2013. The answers to those questions can be found by going to my website, clicking on "Past Teaching" then "MATH1210 Summer 2013" and looking at the Midterm 3 Practice Solutions posted there. Here are answers to the other questions.

1. See Summer 2013 answers.
2. See Summer 2013 answers.
3. Solutions to book problems are readily available online. Just search google.
4. See Summer 2013 answers.
5. See Summer 2013 answers.
6. See Summer 2013 answers.
7. $f(x) = 3x^3 - 3x + 2$ and $f'(x) = 9x^2 - 3$, so $x_{n+1} = x_n - \frac{3x^3-3x+2}{9x^2-3}$. A reasonable initial guess is $x = -1$. You get $x_1 = -.717$, $x_2 = -.567$, $x_3 = -.514$, $x_4 = -.507$, $x_5 = -.507$.
8. See Summer 2013 answers.
9. The partition points are $0 < 1 < 2 < 3$ and the sample points are $.5, 1.5, 2.5$. The width of each rectangle is 1, so the Riemann sum

   $$1 * f(.5) + 1 * f(1.5) + 1 * f(2.5) = 2(.25) + .5 + 2(2.25) + 1.5 + 2(6.25) + 2.5 = 1 + 6 + 15 = 21$$

10. Draw the picture. The definite integral is the signed area under the curve, which is the area of the triangle above the x-axis minus the area of the triangle below the x-axis. The answer is -5.
11. The equation is

    $$R_n = 1 + \frac{1}{12}\left(2 + \frac{3}{n} + \frac{1}{n^2}\right)$$

    Taking the limit gives $7/6$.