Review Problems

October 26, 2016

1. (Fall 2008, Exam 2, #15) A 5 foot ladder standing on level ground leans against a vertical wall. The bottom of the ladder is pulled away from the wall at 2 ft/sec. How fast is the AREA under the ladder changing when the top of the ladder is 4 feet above the ground?

2. (Fall 2002, Exam 2, #11) Find the linearization of $f(x) = \sqrt[3]{x}$ at $x = 27$. Use your linearization to approximate $\sqrt[3]{26}$. Leave your answer in the form of an improper fraction.

3. (Fall 2002, Exam 3, #1) Find the absolute maximum and minimum of $f(x) = x/(x + 1)$ on the interval $[0, 2]$.

4. (Fall 2003, Exam 3, #8) The linear approximation of $f(x) = x^{20}$ at $a = 20$ is used to find an approximate value for 19^{20}. What is the approximate value found?

5. (Fall 2002, Exam 3, #10) Find the critical numbers of $R(t) = t^{1/3} - t^{-2/3}$.

6. (Fall 2005, Exam 3, #8) Find the absolute maximum of $f(x) = \dfrac{x^2 - 4}{x^2 + 2}$ on the interval $[-2, 2]$.

7. (Fall 2007, Exam 3, #1) Find the most common linear approximation of $\frac{1}{1003}$ that uses the reciprocal function.

8. (Fall 2008, Exam 3, #1) What approximate value do you get for $\sqrt{4.1}$ if you use the linear approximation at 4?

9. (Fall 2008, Exam 3, #3) Find the maximum value of $x^3 - 3x + 9$ for $-3 \leq x \leq 2$.

10. (Fall 2008, Exam 3, #4) Find the minimum value of $x^3 - 3x + 9$ for $-3 \leq x \leq 2$.