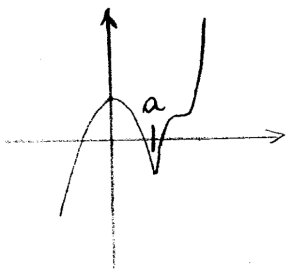
Review Problems

September 21, 2016

1. (Fall 2003, Exam 2, #1) $\dfrac{d}{du}\left(\dfrac{\sqrt[3]{u}}{\sqrt{u}}\right)$

2. (Fall 2003, Exam 2, #2) If the tangent line to the curve $y = x^2 + 3x + 1$ at (a, b) passes through the point $(1, 4)$, then find the possible values of a.

3. (Fall 2003, Exam 2, #6) Sketch the graph of f' given the graph of f.



4. (Fall 2005, Exam 2, #1) If $f(x) = \dfrac{x^2 - 2\sqrt{2}}{x}$, then find $f'(4)$.

5. (Fall 2005, Exam 2, #2) If $g(x) = \dfrac{ax + b}{cx + d}$, then find $g'(1)$.

6. (Fall 2007, Exam 2, #2) Let $f(x) = \dfrac{1}{\sqrt{x}}$. Which of the following equals $f'(4)$?

   I. $\lim\limits_{h \to 0} \dfrac{\frac{1}{\sqrt{4+h}} - \frac{1}{\sqrt{4}}}{h}$

   II. $\lim\limits_{x \to 4} \dfrac{\frac{1}{\sqrt{4}} - \frac{1}{\sqrt{x}}}{x - 4}$

   III. $\frac{-1}{16}$

7. (Fall 2007, Exam 2, #4) $\dfrac{d}{dx}\left(\dfrac{e^x}{1 + x}\right)$

8. (Fall 2007, Exam 2, #5) If $f(x) = \sqrt{x}g(x)$, $g(9) = 12$ and $g'(9) = 2$, then find $f'(9)$.