

Brief Review

Complete the following review questions before the next class. Compare your work with the answers at <http://www.math.ttu.edu/~williams/1352/review-answers.pdf>.

1. Find $\frac{dy}{dx}$ if

(a) $y = x^7 - 5x^{\frac{3}{2}} + \frac{4}{x} - 3$

(b) $y = \sqrt{\cos \sqrt{x}}$

(c) $y = e^{4x} \tan x^2$

(d) $y = \frac{3x}{\sin^{-1} x}$

(e) $x^{\frac{1}{2}} - y^{\frac{1}{3}} = x$

2. Find the maxima, minima, and points of inflection of $f(x) = x^3 + 3x^2 - 9x + 2$. Sketch the graph.

3. Evaluate the following integrals.

(a) $\int \sqrt{x} + x^{-\frac{3}{2}} dx$

(b) $\int \frac{\sin x dx}{(1+2 \cos x)^2}$

(c) $\int \frac{e^{2x} dx}{3-e^{2x}}$

4. Find the area under the graph of $y = 3x^2 - 1$ over $[0, 2]$.