Math 163A

Guide for Test 3

Here are some sample questions from old tests. Some topics that we covered are not represented by these questions, but are still fair game.

1. Compute the following derivatives:

   (a) \( f(x) = 2 + x + \frac{3}{x} - \sqrt{x} - 5x^7 + x^{3/4} \)
   \( \Rightarrow f'(x) = \)

   (b) \( y = \frac{x^3 + x}{x} \) \( \Rightarrow \frac{dy}{dx} = \)

   (c) \( D_x \left[ (x^9 + x^8 + x^5 + 3)(1 + 2x^2 + 9x^3 - 4x^4) \right] = \)

   (d) \( \frac{d}{dx} \left[ (x^9 + 2x^{1/3} + x^5 + 3)^4 \right] = \)

2. Compute the following derivatives:

   (a) If \( f(x) = \frac{u(x)v(x)}{w(x)} \), then in terms of \( u(x), v(x), w(x), u'(x), v'(x), \) and \( w'(x) \), we have \( f'(x) = \)

   (b) \( y = (3 + x^4)^8x^3 \) \( \Rightarrow \frac{dy}{dx} = \)

   (c) \( D_x \left[ ((x^9 + x^8 + x^5 + 3)(1 + 2x^2 + x^3 - 4x^4))^9 \right] = \)