

1. Section 3.8 (Differentials) Exercise #24, 25
2. Section 4.1 (Related Rates)
 - Examples: 3,4
 - Exercises: #10, 11
3. Section 4.2 (Max and Min values) Exercises: #41, 46
4. Section 4.3 (Shapes of Curves)
 - Exercises: #8, 16 (in 16 show $f''(x) = \frac{2x(x^2-12)}{(x^2+4)^3}$ and then use it).
 - Instructions for #7-14 applied to $f(x) = xe^{-x}$ and $f(x) = xe^{-x^2}$.
5. Section 4.5 (Indeterminate Forms) Evaluate the limits:
 - $\lim_{x \rightarrow 1} \frac{\ln(x)}{x-1}$
 - $\lim_{x \rightarrow \infty} \frac{e^x}{x^2}$
 - $\lim_{x \rightarrow \infty} \frac{\ln(x)}{\sqrt[3]{x}}$
6. Optimization Section 4.6
 - Find the point on the parabola $y^2 = 2x$ that is closest to the point (1,4).
 - Find the area of the largest rectangle that can be inscribed in a semicircle of radius r .
7. Section 4.9 (Antiderivatives) Exercises: #16-20

