

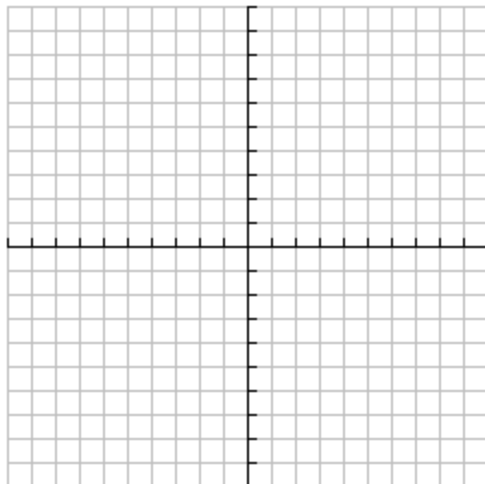
Math 131 Week in Review
Sections 4.2-4.3, 4.6, 4.8, 5.1-5.5
4/18/10

1. Find the critical numbers of $f(x) = \frac{x^2 - 5x + 6}{x - 1}$.

2. Find the local extreme values of $g(x) = \begin{cases} 3x + 2x^2 & x < 0 \\ 3 + 2x^2 - x^4 & x \geq 0 \end{cases}$.

3. Find the global extreme values of $h(x) = x^{\frac{2}{3}}$ over the interval $[-2, 3]$.

4. Sketch the graph of $f(x) = 2x^3 - 11x^2 + 12x - 5$ by algebra and calculus methods.



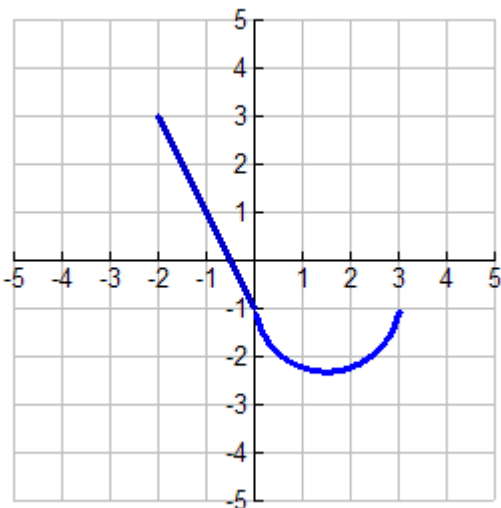
5. A rectangle has its base on the x -axis and its upper two vertices on the parabola $y = 12 - x^2$. What is the largest area the rectangle can have, and what are its dimensions?

6. The graphs of f , f' , and f'' are shown below. Label them appropriately.



7. Find the general antiderivative of $g(x) = 3x^2 + 6x - 5 + \cos(2x)$.

11. Let $g(x) = \int_0^x f(t) dt$ where f is the function whose graph is shown.



- a) Estimate $g(-2)$, $g(-1)$, $g(0)$, $g(1)$, $g(2)$, and $g(3)$.
- b) Where does g have a maximum value? Where does it have a minimum value?
- c) Sketch the graph of g .

12. Evaluate:

a) $\int_{-2}^1 (5e^{2x} - 3) dx$

b) $\int_0^4 \frac{3x^2}{x^3 + 3} dx$

c) $\int x \cos(2x^2) dx$

d) $\int_0^2 \frac{e^x dx}{3 + e^x}$