Chapter 4 Review

1. A 10-ft ladder is leaning against a vertical wall. If the bottom of the ladder is pulled away from the wall at the rate of 2 ft/sec, at what rate is the top of the ladder moving down the wall when the top is 6 ft from the ground?

2. The altitude of a triangle is increasing at a rate of 1 cm/min while the area of the triangle is increasing at a rate of 2 cm^2/min. At what rate is the base of the triangle changing when the altitude is 10 cm and the area is 100cm^2?

3. A farmer with 750 ft of fencing wants to enclose a rectangular area and then divide it into four pens with fencing parallel to one side of the rectangle. What is the largest possible total area of the four pens?

4. Find the dimensions of a rectangle with area 1000m^2 whose perimeter is as small as possible.

5. Find the absolute maximum and absolute minimum for $f(x) = x^{2/5}$ on [-3, 1)

6. Find the value of c to satisfy the Mean Value Theorem (if it exists).

$f(x) = -\frac{1}{x}$ on [-3, -2/3]

7. Find the intervals of increasing/decreasing, points of inflection, and intervals of concavity

for $f(x) = 4x^3 - 16x^2 - 35x + 75$.

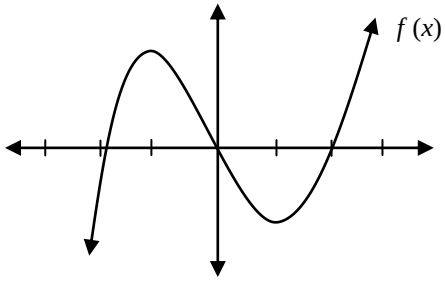
8. Find the relative maximums/minimums for $f(x) = 4x^3 - 16x^2 - 35x + 75$ using the 2nd derivative test.

9. Approximate the value of $8.1^{2/3}$

10. Sketch the graph.

$f(1) = 3$
$f'(x) > 0$, when $x > 1$
$f'(x) < 0$, when $x < 1$
$f''(x) > 0$

11. a) Sketch f' given graph of f



b) Sketch f given graph of f'