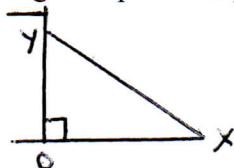


due: Tuesday:

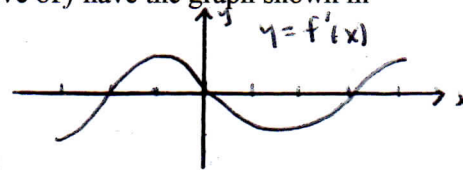
- A ladder 15 feet long is leaning against a building so that end X is on level ground and end Y is on the wall as shown in the figure. X is moved away from the building at the constant rate of $\frac{1}{2}$ foot per second.
 - Find the rate in feet per second at which the length of OY is changing when X is 9 feet from the building.
 - Find the rate of change in square feet per second of the area of $\triangle XOY$ when X is 9 feet from the building.



- The radius of a sphere is increasing at a constant rate of .04 cm/sec. (The volume of a sphere is $V = \frac{4}{3}\pi r^3$.)
 - At the time when the radius of the sphere is 10 cm, what is the rate of increase of its volume?
 - At the time when the volume of the sphere is 36π cm³, what is the rate of increase of the area of a cross section through the center of the sphere?
 - At the time when the volume and the radius of the sphere are increasing at the same numerical rate, what is the radius of the sphere?

on: Tuesday: quizdue: Thursday: read pp. 259-263, 267-270, 277-280

- Determine all local extrema, find on what intervals the function is increasing and on what intervals the function is decreasing; $f(x) = 2x^4 - 4x^2 + 1$
- pg. 282 / #4
- If $f'(x) = x^2 + x - 12$, then $f(x)$ is decreasing on what intervals?
- Let f be the function whose domain is $[-3, 4]$ and let the derivative of f have the graph shown in the figure. On what intervals is f increasing?

Friday: read pp. 280-282

- Use the second derivative test to find all local extrema:
 - $f(x) = 4x^2 + 8x + 1$
 - $y = x^4 - 2x^2$
 - $h(x) = x^4 + 3$
- Find the maximum value of $f(x) = x^3 - 3x^2 - 9x + 2$. Justify your answer.
- At what value of x does the derivative of $f(x) = x^4 + 4x^3$ attain its maximum value? Justify your answer.

Monday: read pp. 273-276

- Find all points of inflection. Determine where the curve is concave up and where it is concave down. $f(x) = x^4 - 4x^3 + 4x - 1$
- How many points of inflection does the graph of $y = -x^5 - 4x^3 + 4x - 1$ have? Verify your answer.
- If the graph of $y = x^3 + ax^2 + bx - 4$ has a point of inflection at $(1, -6)$, what is the value of b ?
- For what values of x is the graph of $y = 3x - x^3$ concave up?