

MTH 151

Quiz 2

Fall 2018

Show all work in a neat and organized fashion. Clearly indicate your answers.
20 points possible.

Graphing calculator OK but not one with CAS (e.g., no TI-89, no TInspire).

Sphere: $V = \frac{4}{3}\pi r^3$, $A = 4\pi r^2$ Cylinder: $V = \pi r^2 h$ Cone: $V = \frac{1}{3}\pi r^2 h$

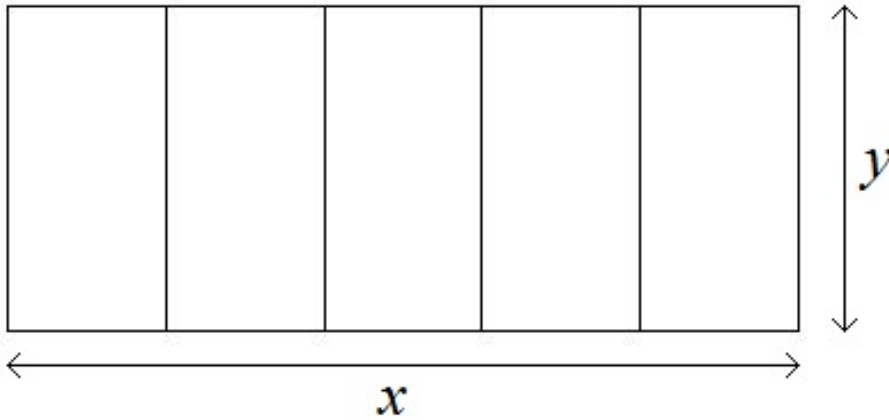
1. (7 pts.) Find the intervals on which f is increasing and the intervals on which f is decreasing.

(Use calculus methods, showing all work.)

$$f(x) = 2x^3 - 9x^2 - 24x + 8$$

2. (6 pts.) The radius of a spherical ball is increasing at a rate of 6 cm/min. At what rate is the surface area of the ball increasing when the radius is 15 cm?

3. (7 pts.) A farmer has 900 meters of fencing with which to build a rectangular corral having four internal dividers, all parallel to two sides of the corral, as shown in the figure. What is the maximum total area of such a corral?



You must set up the problem on a closed interval and use the Candidates Test (i.e., Closed Interval Method), showing all work, to justify your solution.