

MATH 170 – Section 006 – Quiz 8

You may work with other class members on this quiz, but you may *not* receive assistance from people not in your MATH 170 section. You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or YOU WILL GET A ‘ZERO’ ON THE QUIZ. Do not use decimal approximations unless asked to do so. Your work on this quiz must be handed in by the beginning of class on Friday, 6 November 2009. GOOD LUCK!

1) Let

$$f(x) = x^{5/3} - 20x^{2/3}.$$

a) Find all critical points of f .

b) Find the global minimum and global maximum values of f on the interval $[-8, 8]$ and tell at which values of x these occur.

2) A zookeeper wishes to construct three adjacent rectangular cages (see Figure 1). The fencing for the perimeter of the rectangular area costs \$40 per foot

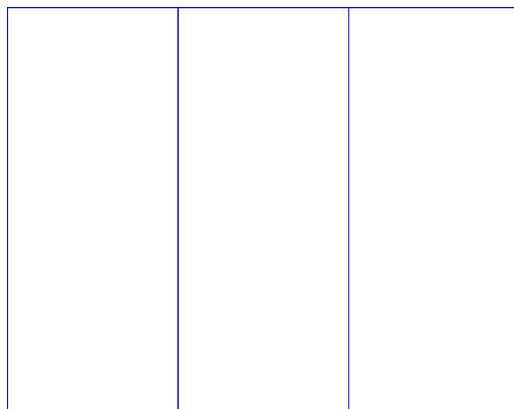


Figure 1: Three adjacent rectangular cages

while the fencing that separates adjacent cages costs \$60 per foot. The total area of the cages is to be 100,000 square feet. How much of each type of fence should be used to minimize the cost? What is the total cost in this case?