

Math 176 Quiz 12 Version A

1. The demand function for a certain make of replacement cartridges for a water purifier is given by the following equation where p is the unit price in dollars and x is the quantity demanded each week, measured in units of a thousand.

$$p = -0.01x^2 - 0.3x + 32.$$

Determine the consumers' surplus (reported as total number of units) if the market price is set at \$4/cartridge. (After computing the integral don't forget to multiply your answer by 1000 to convert from units of a thousand to the total number).

2. Consider the function $f(x, y) = x^2y^3 + y$. Find the following derivatives:

(i) $f_x(x, y)$

(ii) $f_y(x, y)$

(iii) $f_{xy}(x, y)$