MA 16010 Quiz 10

Lesson 26-27

4 April 2022

Problem 1. A company's marketing department has determined that if their product is sold at the price of p dollars per unit, they can sell $q = 2800 - 200p$ units. Each unit costs 10 dollars to make. What is the equation that can be used to find the maximum possible profit?
(**You do not need to actually maximize the equation, just right it down.**)

Problem 2. Find the solution to:

$$\int \frac{x^2 - 1}{3\sqrt{x}} dx =$$

Remember to write $+ C$ at the end.

Profit = (Quantity)(price) − (Cost)(Quantity)

$P = qp - 10q$

$= (2800 - 200p)p - 10(2800 - 200p)$

$= 2800p - 200p^2 - 28000 + 2000p$

$= 4800p - 200p^2 - 28000$

Problem 2

$$\int \frac{x^2-1}{3\sqrt{x}}\,dx = \frac{1}{3}\int (x^{3/2} - x^{-1/2})\,dx$$

$$= \frac{1}{3}\left(x^{5/2}\left(\frac{2}{5}\right) - x^{1/2}(2)\right) + C$$

$$= \frac{2}{15}x^{5/2} - \frac{2}{3}x^{1/2} + C$$