ARALIK 2017 TARİH BASKILI
MATHEMATICS II
DERS KİTABINA İLİŞKİN DÜZELTME CETVELİ

1- ***Ünite 2, Sayfa 42, "Answer Key for "Test Yourself", Soru 7'nin cevap şıkkı "a" olarak güncellenmiştir.***

7. a We first need to determine the intersection points of the given curves. To do so, let us equate them:

$$2x^3=8x$$
$$2x^3-8x=0$$
$$2x(x^2-4)=0$$

The points satisfying the last equation are -2, 0, 2. Since there is an extra condition of $x\geq 0$, the points of intersection are 0 and 2. Also, in the interval $0\leq x\leq 2$, we have $x^3\leq x$ and therefore the required area A is evaluated as

$$\begin{aligned} A &= \int_0^2 (8x-2x^3)\ dx \\ &= \left(4\cdot x^2 - \frac{x^4}{4}\right)\Big|_0^2 \\ &= \left(16 - \frac{16}{4}\right) - 0 \\ &= 8. \end{aligned}$$

2- ***Ünite 3, Sayfa 47, "Example", çözümü aşağıdaki şekilde değiştirilmiştir.***

Example: A famous shoe company produces 80 units of shoes with a marginal cost of $C'(x) = 6x^2 + 3x + 5$. If it costs 1772 to produce 4 units of shoes, what are the total and fixed costs?

Solution: We can find the total cost function $C(x)$ by integrating the marginal cost function with respect to x:

$$\begin{aligned} C(x) &= \int C'(x)dx \\ &= \int (6x^2+3x+5)dx \\ &= 2x^3 + \frac{3x^2}{2} + 5x + c \end{aligned}$$

In order to find the integral constant, we need an extra information. This information is already given in the question, that is the cost of producing 4 units of shoes which is $C(4) = 1772$. Inserting this value into the cost function we found through integration that

$$C(4) = 2\cdot 4^3 + \frac{3\ \cdot 4^2}{2} + 5\cdot 4 + c$$

$$\begin{aligned} 2\cdot 4^3 + \frac{3.4^2}{2} + 5\cdot 4 + c &= 1772 \\ 128 +\ 24 + 20 + c &= 1772 \\ c &= 1000. \end{aligned}$$

Now we can write the total function as $C(x) = 2x^3 + \frac{3x^2}{2} + 5x + 1600$. Even when there is no production, there is a cost called the fixed cost and here it is easily found to be $C(0) = c = 1000$.