Math 1313
Homework 1
Section 1.5(1st Half)

Use the following problem to answer questions 1 – 3.
Deep Blue, a deep sea fishing company, bought a boat for $250,000. After 9 years, Deep Blue plans to sell it for a scrap value of $95,000. Assume linear depreciation.

1. Find the annual rate of depreciation.
    a. –$27777.78
    b. –$10555.56
    c. –$17222.22
    d. $27777.78
    e. $17222.22

2. Find the building value at the end of the 4^{th} year.
    a. $181111.12
    b. $163888.88
    c. $138888.88
    d. $206111.12
    e. $207777.76

Use the following problem to answer questions 3 and 4.
In 2015 a company installed a new machine in one of its factories at a cost of $780,000. The machine is linearly depreciated over 15 years with a scrap value of $105,000.

3. Find an expression for the machine value in the t^{th} year of use ($0 \leq t \leq 24$).
    a. $V(t) = –52000t + 105000$
    b. $V(t) = 105000t + 45000$
    c. $V(t) = –45000t + 780000$
    d. $V(t) = 45000t – 105000$
    e. $V(t) = 52000t – 780000$

4. Find the machine's value in the year 2024.
    a. $510000
    b. $420000
    c. $330000
    d. $405000
    e. $375000

Use the following problem to answer questions 5 – 7.
A company has a fixed costs $160000. It costs $22 to produce each product. Each product sells for $58.

5. What are the cost, revenue and profit functions?
    a. $C(x) = 22x + 160000$, $R(x) = 36x$, $P(x) = 58x$
    b. $C(x) = 22x$, $R(x) = 58x + 160000$, $P(x) = 36x – 160000$
    c. $C(x) = 22x + 160000$, $R(x) = 58x$, $P(x) = 36x – 160000$
    d. $C(x) = 58x + 160000$, $R(x) = 22x$, $P(x) = –36x + 160000$
    e. $C(x) = 22x – 160000$, $R(x) = 58x$, $P(x) = 36x + 160000$

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6. Compute the profit (loss) corresponding to production levels of 5,500 products.
    a. Profit of $319000
    b. Profit of $38000
    c. Loss of $39000
    d. Loss of $159000
    e. Loss of $281000

7. How many chargers must be produced and sold if you wish to make a profit of $51760? Round up to the nearest whole number.
    a. 3652
    b. 2353
    c. 9626
    d. 1438
    e. 5883

Use the following problem to answer questions 8 – 10.
Your company sells phone chargers. The fixed costs for your company are $63450. It costs $3.68 to produce each phone charger and each sells for $17.99.

8. What are the cost, revenue and profit functions?
    a. $C(x) = 3.68x$, $R(x) = 17.99x + 63450$, $P(x) = 14.31x - 63450$
    b. $C(x) = 17.99x + 63450$, $R(x) = 3.68x$, $P(x) = -14.31x + 63450$
    c. $C(x) = 3.68x + 63450$, $R(x) = 14.31x$, $P(x) = 17.99x$
    d. $C(x) = 3.68x - 63450$, $R(x) = 17.99x$, $P(x) = 14.31x + 63450$
    e. $C(x) = 3.68x + 63450$, $R(x) = 17.99x$, $P(x) = 14.31x - 63450$

9. Compute the profit (loss) corresponding to production levels of 5500 chargers.
    a. Profit of $78705
    b. Profit of $15255
    c. Loss of $42055
    d. Loss of $83690
    e. Loss of $20240

10. How many chargers must be produced and sold if you wish to make a profit of $45389? Round up to the nearest whole number.
    a. 8034
    b. 7606
    c. 7852
    d. 5489
    e. 6646