

QUESTION 1

1.

Atmospheric carbon dioxide levels continue to increase and are suspected to contribute to global warming. The solution to the polynomial equation:

$$x^3 - 380x^2 + 2x - 760 = 0$$

gives the record high amount of carbon dioxide in parts per million (ppm) in 2005, as measured at Mauna Loa Observatory. Determine this record amount by:

1. Factoring the polynomial (pay attention to how many terms there are to determine how to factor)
2. Solving by setting each factor equal to zero.
3. Evaluating your results to see if they make sense in the context of the question. If a solution doesn't make sense, explain why not.
4. Writing a sentence that gives the labeled solution

QUESTION 2

1.

Part 1 of 3:

A missile is shot upward from a submarine 1440 feet below sea level at an initial velocity of 528 ft/sec. A function that approximates the height of the missile (relative to sea level) is given by:

$$h(t) = -16t^2 + 528t - 1440$$

where $h(t)$ is the height of the missile in feet and t is the time in seconds.

Complete the table to determine the height of the missile for the given values of time, t . This is a "Fill in the blanks" question so please give ONLY the answer with no label and do NOT use commas in your answers for height.

1.

time, (t)	Height, h(t)
0	Blank 1
5	Blank 2
15	Blank 3
25	Blank 4
35	Blank 5

QUESTION 3

1.

Part 2 of 3:

Interpret the meaning of EACH negative value you came up with in the previous question. Describe the behavior of the missile at each of the times.

QUESTION 4

1.

Part 3 of 3:

Using the same steps as you followed in the first question of this case study, find the time required for the missile to emerge from the water and the time required for the missile to reenter the water. Start your factorization by taking out the GCF. (Hint - The height of the missile, $h(t)=0$ at sea level)

QUESTION 5

1.

A rectangular garden has a walk around it of width x . The garden is 20 ft by 15 ft. Write a function representing the combined area, $A(x)$, of the garden and walk. Write as a polynomial in standard form.

Part 1 of 2:

QUESTION 6

1.

Part 2 of 2:

Use the function you came up with in the previous question to find the combined area if the walkway is 3 ft. Write a sentence that gives your labeled answer.