Let’s start with functions from formulas. This is the most common way to use functions in an algebra class, even if it’s not the most common outside of algebra class.

To evaluate a function from a formula, first substitute the input value in the formula.

Then calculate the result.

For our first example, start with the function h of p equals p squared plus 2 p. We are told to evaluate h of 4.

The variable p in this formula is a placeholder.

Wherever there is a p, we are going to put a 4 in its place.

The final step is to calculate 4 squared plus 2 times 4.

The value of h of 4 is 24.

For the second example, the function is f of x equals 3 over 6 plus 2 to the x power. This time, we will evaluate f of 3.2. Again, x is a place holder.

Substitute 3.2 for x.

The exponent is first. Raise 2 to the 3.2 power to get 9.190. You will need to use a calculator for this step. Keep the results in the calculator, so it keeps track of all the decimals for you. I only write three decimals while showing work. I will only round after the last step.

Next, add in the denominator.

Finally, divide. The value of f of 3.2 is 0.198. Use the directions on WebAssign to round to the correct number of decimal digits.

For our last example, we’ll look at an application of functions. This will be very similar to the types of problems we’ll ask all semester. The number N of deer present in a nature preserve after t years is given by N equals 10.3 over 0.03 plus 0.55 to the t power.

The first part asks how many deer were initially at the preserve.

When a problem asks for an “initial value”, the value of the input variable is 0. Substitute 0 for t.

Any number (except 0) raised to the 0 power is 1.

Add in the denominator.

Finally, divide. There were 10 deer initially on the preserve.

For part b, we are told to evaluate N of 15 and explain the meaning.

Again, substitute 15 for t.

Performing the exponent gives 0.00013. This is a time when keeping your work in the calculator will help you.

Add in the denominator.

Finally, divide. The value of N of 15 is 341.88. This is the result of the algebra, but it is not the end of the directions.

We will find our answer to the nearest whole number. In the context of the problem, the value of N of 15 means there are 342 deer on the preserve after 15 years.

For part c, we’re told to express the number of deer after 20 years in function notation. Then we will calculate that value. I find students miss this first part because they are focused on doing the calculations. I will take off points if you forget the first part.

In function notation, the number of deer on the preserve after 20 years is written as N of 20. There is nothing else to write for that piece.

To calculate the value, substitute 20 for t. This calculation will look very similar to the last calculation.

First do the exponent. This is a very small decimal.

Second, perform the addition.

Third, divide. The result of the calculation is 343.26. Round this answer to 343 deer.

The last part of this question asks how much the population increased from the 15th year to the 20th year. This isn’t difficult, but we must go an extra layer deep to answer the question.

The increase will be the population in the 20th year minus the population in the 15th year. Written in function notation, that is N of 20 minus N of 15.

We calculated the function values in the last two parts, so we’ll reuse those values. We’re not going to use the rounded values for now.

Subtracting the function values gives 1.38 for the answer.

This means that the population increased by one deer over the time interval.