

1. In the first example of Section 9.2, you found that in year $t = 0$ (corresponding to today), you deposit \$1000 in an account which is compounded annually at 5%. Complete the blanks with numbers.

At year $t = 1$, another \$1000 is added, while the previous quantity of \$1000 grows by 5%; hence we have (Previous amount) $1.05 + 1000$ or
 = (_____) $1.05 + 1000$.

At year $t = 2$, another \$1000 is added, while all the previous quantities grow by 5%; hence we have (Previous amount) $1.05 + 1000$ or
 = $(1000(1.05) + 1000)1.05 + 1000$, which, after distributing, becomes the sum of three terms:
 = _____ + _____ + _____
 = $1000(\text{_____} + \text{_____} + \text{_____})$

At year $t = 3$, yet another \$1000 is added to the previous, creating a total balance of $1000(1.05)^3 + 1000(1.05)^2 + 1000(1.05) + 1000$.

What is the meaning of the $1000(1.05)^3$ term in the expression for the balance at year $t = 3$?

What is the meaning of the $1000(1.05)^2$ term in the expression for the balance at year $t = 3$?

What is the meaning of the $1000(1.05)$ term in the expression for the balance at year $t = 3$?

What is the meaning of the *last term* in the above expression for the balance at year $t = 3$?

At year $t = 4$, after another \$1000 is added to the previous, you have a total balance of $1000(1.05)^4 + 1000(1.05)^3 + 1000(1.05)^2 + 1000(1.05) + 1000$.

At year $t = 5$ (five years from today), your total balance *prior to adding another \$1000* would be $1000(1.05)^5 + 1000(1.05)^4 + 1000(1.05)^3 + 1000(1.05)^2 + 1000(1.05)$.

This amount is less than \$6000. What is this amount, accurate to two decimal places? \$ _____ . _____

By solving the equation $1000x^5 + 1000x^4 + 1000x^3 + 1000x^2 + 1000x = 6000$ graphically, you found that a rate of _____% would create a balance of \$6000, since x is the growth factor.

What interest rate would be give you \$6600 (keeping the other conditions the same)? _____% (Report accurate to 1 decimal place) Hint: Solve $1000x^5 + 1000x^4 + 1000x^3 + 1000x^2 + 1000x = 6600$.

Solve the equation $1000x^5 + 1000x^4 + 1000x^3 + 1000x^2 + 1000x = 5000$. $x =$ _____
 Interpret the solution in terms of the context of the situation:

3. For the polynomial $g(x) = 3x^2 + 4x^5 + x - x^3 + 1$, which is true? Select one.
- The degree of the polynomial is $4x^5$, since this term has the highest power of x .
 - The degree of the polynomial is $3x^2$, since this is the leading term.
 - The degree of the polynomial is 5, since this is the exponent on the term with the highest power.
 - The degree of the polynomial is 2, since this is the exponent on the leading term.
 - The degree of the polynomial is $11 = 2 + 5 + 1 + 3$, since this is the sum of all the powers of x .
4. For the polynomial $g(x) = 3x^2 + 4x^5 + x - x^3 + 1$, which is true? Select one.
- The coefficient of the third degree term is 1.
 - The coefficient of the third degree term is -1 .
 - The coefficient of the third degree term is 2.
 - The x term has degree 0 and coefficient 1.
 - None of these are true.
5. The constant term of $g(x) = 3x^2 + 4x^5 + x - x^3 + 1$ is _____.
6. The degree of the constant term, if present, is always 0.
- True
 - False
7. When a polynomial function is written in descending powers of x , the leading term is always the **first** term.
- True
 - False
8. After reading the box at the top of page 399, you can conclude that the **long-run behavior** of $g(x) = 3x^2 + 4x^5 + x - x^3 + 1$ looks like the graph of the power function whose equation is $y = \underline{\hspace{2cm}}$, and the **long-run behavior** of $q(x) = 3x^6 - 2x^5 + 4x^2 - 1$ looks like the graph of the power function whose equation is $y = \underline{\hspace{2cm}}$.
9. Pick the best answer. To find the **long-run** behavior of a polynomial, we look at
- its constant term
 - its leading coefficient
 - its degree
 - its leading term
 - the number of terms it has
 - its factored form.
10. Pick the best answer. To find the **short-run** behavior of a polynomial, we look at
- its constant term
 - its leading coefficient
 - its degree
 - its leading term
 - the number of terms it has
 - its factored form.
11. A polynomial is written in factored form. What is the behavior of the graph near its zero in each case? Select from A, B or C.
- the power of the factor is 1
 - the power of the factor is 2, 4, 6, 8,
 - the power of the factor is 3, 5, 7, ...

