College Algebra Release Notes 2017

Publish Date:

March 15, 2017

Revision Number:

CA-2015 002(03/17)-BW

Errata:

Below is a table containing submitted errata, and the resolutions that OpenStax has provided for this latest text.

Issue	Resolution	Severity
Chapter 1: Prerequisites, Section: Real Numbers: Algebra Essentials: In the discussion of the distributive property, this textbook includes the statement: "Multiplication does not distribute over subtraction", which is false as far as I can tell. No further elaboration is made, and no supporting example is provided. The same line continues that, "division distributes over neither addition nor subtraction." This statement is incorrect or at least poorly stated, as division distributes over addition one way: (a+b)/c = a/c +b/c, but not the other: c/(a+b) != c/a + c/b.	Delete the sentence "Multiplication does not distribute over subtraction, and division distributes over neither addition nor subtraction."	Typo
Chapter 1 Prerequisites, Section: Real Numbers: Algebra Essentials, Try It 7: 1.7 d. has two operation symbols. It shows 17/18 + * [4/9 + (-17/18)]. Per the solution, it should be 17/18 + [4/9 + (-17/18)]	Remove the extraneous multiplication sign from the equation given in part d of Try It 7 as follows: Try It #7: Use the properties of real numbers to rewrite and simplify each expression. State which properties apply. d. 17/18 + [4/9 + (-17/18)]	Critical
Chapter 1: Prerequisites, Section: Real Numbers: Algebra Essentials, Example 6: The number 4 is added randomly in simplifying (5^2)/7 - sqrt (11-2).	In part b of the solution to Example 6 Using the Order of Operations, revise "5^2/7" to "(5^2 -4)/7".	Minor

Chapter 1 Prerequisites, Section: Real Numbers: Simplifying Algebraic Expressions, Exercise 2: While the expression to simplify is as follows 2r?5(3?r)+4, the 2nd simplification step is 2r+5y?15+4 (notice the new y variable). The correct expression should be: 2r+5r?15+4	Revise to say: 2r+5r?15+4	Minor
Chapter 1: Prerequisites, Section: Real Numbers: Algebra Essentials, Example 12: In example 12, solution b. the second line reads "= 2 r + 5 y ? 15 + 4" where it should read "= 2 r + 5 r ? 15 + 4" as r is the variable in this equation, not y.	Revise the variable "y" to "r" in part b of the solution to Example 12 "Simplifying Algebraic Expressions".	Major
Chapter 1: Prerequisites, Section: Exponents and Scientific Notation, Subsection: Using the Zero Exponent Rule of Exponents: In Example 1.17 part a in the solution has the same text repeated in each step. The second line should be equals 3 to the zero power. The last step should be equals 1.	Revise the solution to Example 1.17 part b. "Using the Zero Exponent Rule" as follows: b. (c^3)/(c^3) = c^(3 - 3) = c^(3 - 3) = c^0 = 1	Minor
Chapter 1: Prerequisites, Section: Exponents and Scientific Notation: Example 1.23 Solution part d. The arrow says 6 places to --> but is actually 13 places. Result is still correct.	Revise the solution to part d. of Example 1.23 "Converting Standard Notation to Scientific Notation" to include the correct number of places, as follows: d. 0.00000000000094 ----> 13 places	Typo
Chapter 1: Prerequisites, Section: Exponents and Scientific Notation: In Example 1.20, part b in the solution has a typo (the parentheses are missing from the original problem).	Revise the solution to part b. of Example 1.20 "Using the Power of a Product Rule" to include parentheses around "2t" as follows: Solution ... b. (2t)^15 = (2)^15 x (t)^15 = (2^15)(t^15) = 32,768t^15	Minor

Chapter 1: Prerequisites, Section: Radicals and Rational Expressions, Odd Answers: Solution to Exercise #39 is in error: m^(5/2) sqrt(289) reduces to 17 m^2 sqrt(m) (not 18 m^2 sqrt(m) as in solutions; note 18^2 = 324). Change solution coefficient from 18 to 17.	Revise the solution to exercise 39 as follows: 17m^2[sqrt(m)]	Typo
Chapter 1: Prerequisites, Section: Polynomials, Section Exercises: #38-52, direction should be: "For the following exercises, find the product." (Previously: "For the following exercises, find the sum or difference.").	Revise the direction for Section Exercises #38 - 45 as follows: "For the following exercises, multiply the polynomials."	Minor
Chapter 1: Prerequisites, Section: Polynomials, Subsection: Using FOIL to Multiply Binomials: I believe there is an error on page 78 of college algebra example 1.44 The examples uses (2x-10)(3x+3)...but then shows 2x-18 3x+3 in the solution steps.	Revise the question for Example 1.44 "Using FOIL to Multiply Binomials" as follows: Use FOIL to find the product. (2x - 18)(3x + 3)	Typo
Chapter 1: Prerequisites, Section: Polynomials: On the PDF version, the problem reads (6w^2 + 24w + 24) - (3w - 6w + 3). When I went to check my answer on the online version, my answer was wrong. I discovered that the question on the online version was slightly different. It read: (6w^2 + 24w + 24) - (3w^2 - 6w + 3), missing the second ^2	Revise to say: (3w^2 - 6w + 3)	Minor
Chapter 1: Prerequisites, Section: Factoring Polynomials, Section Exercises: Problem 35 is a repeat of problem 34 and the wrong answer is given in "odd answers", both in web view and PDF versions.	Replace exercise #35 with the following: 35. 25p^2 - 120p + 144	Typo

Chapter 2: Equations and Inequalities, Section: Linear Equations in One Variable, Example 14: The second equation is not complete and the equation for the blue line on the graph should be y=3/4x-2.	Revise the second equation in the solution for Example 14 "Graphing Two Equations, and Determining Whether the Lines are Parallel, Perpendicular, or Neither" as follows: Second equation: 3x - 4y = 8 -4y = - 3x + 8 y = (3/4)x - 2	Minor
Chapter 2: Equations and Inequalities, Section: Models and Applications, Section Exercises 13-16: The number of devices that makes the two plans equal in cost is six, but this number of devices is outside the domain of the function for the Family Plan, for which the $90 monthly fee only applies up to five lines. I suspect that the level of the question does not expect the student to deal with solutions outside the domain. If it does, the question should include a prompt for such analysis. The difficulty can be easily fixed by changing the, "up to 5 lines," to, perhaps, "up to eight lines."	Revise the Section Exercises instructions for #13 - 16 to replace "up to 5 lines" with "up to 8 lines" for the Family Plan.	Typo
Chapter 2: Equations and Inequalities, Section: Complex Numbers, Odd Answers, #3: Give an example to show that the product of two imaginary numbers is not always imaginary. Solution in Odd Answers: Possible answer: i times i equals 1, which is not imaginary. No, i times i equals -1, which also is not imaginary.	Revise the answer to #3 to say "i times i = -1" as follows: 3. Give an example to show that the product of two imaginary numbers is not always imaginary. Possible answer: i times i equals -1, which is not imaginary.	Typo
Chapter 2: Equations and Inequalities, Section: Quadratic Equations, Section Exercises #15: Second solution to Exercise 15 is missing (should have solutions x = -2, x = 3; answer shows only the x = -2 solution).	Revise the solution to exercise 15 as follows: 15. 5x^2 = 5x + 30 Solution: x = -2, 3	Typo

Chapter 2: Equations and Inequalities, Section: Quadratic Equations: Re: the discriminant, the claim about the nature of the rationality of solutions is false. More specifically: the claim only holds if a, b, c are themselves rational, and can fail if any of them are irrational (compare to the definitions which permit a, b, c to be any real number). Example 1: x^2 + sqrt(2) x = 0. Discriminant is 4, a perfect square, and the book claims that the solutions will be "two rational solutions". However, the solutions are {0, -sqrt(2)}. Example 2: x^2 + sqrt(2) x + 1/2 = 0. Discriminant is 0, and the book claims that the solution will be "one rational number". However, the solution is {-sqrt(2)/2}. Resolution: The claims about rationality of solutions should be stricken out. More simply, as in other texts: If discriminant d > 0 then two real solutions; if d = 0 then one repeated real solution; if d < 0 then two complex solutions. Answers to examples and exercises should be changed to match this.	In the box "the discriminant", revise the first sentence as follows: "For ax^2 + bx + c = 0, where a, b, and c are rational and real numbers, the discriminant is the expression under the radical in the quadratic formula: b^2 - 4ac."	**Critical**

Chapter 2: Equations and Inequalities, Section: Quadratic Equations, Example 1: There is a discussion of factoring the equation and finding solutions that is just fine. However, the Figure 2 following (in the online version), which is the same as Fig. 2.41, shows an unlabeled graph of y = (x-2)(x+3), and claims that the solutions are the x-intercepts of (x-2)(x+3) = 0. There are two issues I want to point out here: First, I never allow students to provide a graph sketch if they do not say what it is a graph of, and I don't want my textbook to do that either. I have seen several of these so far (I have only looked through chapter 2) - these should be fixed. Second, an equation in x does not have x-intercepts. It is difficult for students at this level to get used to how equations and graphs of functions connect, but also make the distinction between relationship between y and x and an equation in x alone.	Revise the solution of Example 1 "Factoring and Solving a Quadratic with Leading Coefficient of 1" to add "y =" before the equation as follows: "...The solutions are the x-intercepts of y = x^2 + x - 6 = 0."	Major

Chapter 2: Equations and Inequalities, Section: Quadratic Equations AND Chapter 3: Functions, Section: Functions and Function Notation, Table 3.14: The text refers to "Factoring and Solving a Quadratic Equation of Higher Order." A quadratic equation is order 2 and only order 2. There is no higher order quadratic equation. It should read "Solving a Quadratic Equation by Factoring when the Leading Coefficient is not 1." In Example 5. The same basic error appears. "Solving a Higher Degree Quadratic Equation by Factoring." A quadratic equation has a degree of 2 and no higher degree exists for a quadratic equation. Perhaps it should read, "Solving a Polynomial of Higher Degree by Factoring The video link for solving equations with rational exponents using reciprocal powers takes viewers to a link with an incorrect solution. The second problem solved in the video is not done properly and one solution is completely missed. In the graphs for the Toolkit functions, both the quadratic and square root functions should have arrows added to the graphs of the functions to indicate that the functions do indeed continue.	Revise subsection title "Factoring and Solving a Quadratic Equation of Higher Order" to "Solving a Quadratic Equation by Factoring when the Leading Coefficient is not 1" Revise Example 2.43 title "Solving a Higher Degree Quadratic Equation by Factoring" to "Solving a Polynomial of Higher Degree by Factoring". Revise Table 3.14 so that all graphs for Toolkit functions indicate with arrows the direction in which the function continues.	Major

Chapter 2: Equations and Inequalities, Section: Other Types of Equations, Odd Answers, #19: Solve the following polynomial equations by grouping and factoring. 5x^3 + 45x = 2x^2 + 18 The equation has three solutions, two of which are imaginary, but the solutions at the back of the book only give the real solution. Solving quadratic equations with complex solutions was touched upon but not well covered in the previous section (Section 2.5, Example 10), so it's not unreasonable to expect students to find the imaginary solutions. Perhaps solving equations with complex solutions should be given more explicit coverage. In the section on "Using the Square Root Property," perhaps you should have one or two examples with complex solutions, and then have a section of exercises with complex solutions. Then you could assign 2.6 #19 above and expect students to find all three solutions.	Revise the answer to #19 as follows: 19. 5x^3 + 45x = 2x^2 + 18 Answer: 2/5, +- 3i.	Typo
Chapter 3: Functions, Section: Rates of Change and Behavior of Graphs, Example 3: Example 1.31 D(t) for t=6 shows 282 in the table, should show 292	In Example 3 "Computing Average Rate of Change from a Table," revise the value under "t(hours), 6" in the table from 282 to 292.	Typo

Chapter 3: Functions, Section: Composition of Functions, Example 9: The composite function (f \circ g)(x) = \sqrt{ \sqrt{3-x} + 2}. The domain of this function is (-infinity, 3]. The original solution missed the square root of g and had \sqrt{3 - x +2} = \sqrt{5 - x} as the composite function.	Revise the solution to Example 9 "Finding the Domain of a Composite Function Involving Radicals" as follows: Solution Because we cannot take the square root of a negative number, the domain of g is (negative infinity, 3]. Now we check the domain of the composite function (f of g)(x) = sqrt[sqrt(3 - x) + 2] For (f of g)(x) = sqrt[sqrt(3 - x) + 2], sqrt(3 - x) + 2 >= 0, since the radicand of a square root must be positive. Since square roots are positive, sqrt(3 - x) >= 0, or 3 - x >= 0, which gives a domain of (negative infinity, 3].	Typo
Chapter 3: Functions, Section: Composition of Functions, Figures 3 and 4: The second graph should be labeled "g(x)," not "f(x)." Similarly, in Exercises 50-57, the second and third graphs are g(x) and h(x).	Label graph 3 "f" and graph 4 "g".	Typo
Chapter 3: Functions, Section: Transformation of Functions, Example 4: f(x) should actually be f(x-3) in the first column, 3rd row.	In the second table of the solution to Example 4 "Shifting a Tabular Function Horizontally", revise the first column, third row from "f(x)" to "f(x - 3)".	Typo

Chapter 3: Functions, Section: Transformation of Functions, and Section: Inverse Functions: Combining transformations box. Second grouping, "f(bx+h), first horizontally shift by h and then horizontally stretch by 1/b" really should be "f(bx-h), first horizontally stretch by 1/b and then horizontally shift by h/b". Stretch and compressions should be done before shifts, actual shift will be h/b, and the minus is to maintain similar notation from previous presentation of horizontal shifts. Third grouping "f(b(x+h))" should be "f(b(x-h))" to stick with similar notation from previous presentation of horizontal shifts. Second: Last paragraph of text before Q&A: "f(x)=x^2 with its range limited to [0,\infty), which is a one-to-one function" should be "f(x)=x^2 with its domain limited to [0,\infty), which is a one-to-one function".	In Section: Transformation of Functions, Subsection: Performing a Sequence of Transformations, "combining transformations" box, revise "form f(bx + h)" to "form f(bx - h)" and "form (b(x + h))" to "form (b(x - h))". In Section: Inverse Functions, Subsection: Finding Domain and Range of Inverse Functions, revise the last paragraph to say "domain" instead of "range" as follows: "...For example, we can make a restricted version of the square function f(x) = x^2 with its domain limited to [0, infinity)...	Typo
Chapter 3: Functions, Section: Transformation of Functions, Subsection: Graphing Functions Using Reflections about the Axes: In the process of reflecting the base function the book chose two points as a reference and performed the three transformations. The first was coreect. The second transformation has a typo (0, -1) (1, -2) should be (0, -1) (-1, -2) . The third transformation has a typo (0, 0) (1, 1) should be (0, 0) (-1, -1). (This means that the original points, (0,1) and (1,2) become (0,0) and (1,1) after we apply the transformations.) should be -> (This means that the original points, (0,1) and (1,2) become (0,0)	Revise the solution to Example 3.59 "Applying a Learning Model Equation" as follows: Solution ... 1. First, we apply a horizontal reflection: (0, 1) (–1, 2). 2. Then, we apply a vertical reflection: (0, ?1) (-1, –2). 3. Finally, we apply a vertical shift: (0, 0) (-1, -1). This means that the original points, (0,1) and (1,2) become (0,0) and (-1,-1) after we apply the transformations.	Typo
Chapter 3: Functions, Section: Inverse Functions, Section Exercises #16: It should be: f(x)=x/(2+x).	Revise exercise 16 as follows: "Given f(x) = x/(2+x) and g(x) = (2x)/(1 - x)..."	Critical

Chapter 5: Polynomial and Rational Functions, Section: Power Functions and Polynomial Functions, Figure: 5.21: There are a few errors in Figure 5.21. The figure shows the end behavior of the function f(x) = kx^n where n is a positive integer. The captions for the individual graphs are incorrect in three of the four boxes. They should read If k>0 then for odd values of n as x--> infinity then f(x) --> infinity and as x--> negative infinity then f(x) --> negative infinity If k<0 then for even values of n as x--> infinity then f(x) --> negative infinity and as x--> negative infinity then f(x) --> negative infinity If k<0 then for off values of n as x--> infinity then f(x) --> negative infinity and as x--> negative infinity then f(x) --> infinity	Revise negative and positive signs preceding infinity signs in Figure 5.21.	Major
Chapter 5: Polynomial and Rational Functions, Section: Power Functions and Polynomial Functions, Subsection: Identifying Polynomial Functions: Definition of a polynomial "Each a_i is a coefficient and can be any real number other than zero." Should be "Each a_i is a coefficient and can be any real number, a_n is not equal to zero." Only the leading coefficient cannot be zero. As it currently is stated, a polynomial must have a nonzero term for every exponent which is definitely not the case.	In the "polynomial functions" box, revise "Each a_i is a coefficient and can be any real number other than zero." to "Each a_i is a coefficient and can be any real number, but a_n cannot = 0."	Typo
Chapter 5: Polynomial and Rational Functions, Section: Graphs of Polynomial Functions, Example 2: The first exponent of x should be 6, not 2.	In Example 2 "Finding the x-Intercepts of a Polynomial Function by Factoring", revise the first line of the solution as follows: Solution x^6 - 3x^4 + 2x^2 = 0 (Previous: x^2 - 3x^4 + 2x^2 = 0)	Typo

Chapter 5: Polynomial and Rational Functions, Section: Graphs of Polynomial Functions, Try It #2: It says it is a degree 5 polynomial and the zero at x=-5 is multiplicity 1, but it should be a degree 7 polynomial with the zero at x=-5 of multiplicity 3, since it looks like it is crossing the x-axis more like a cubic than a linear function.	Revise the answer to Try It #2 as follows: Try It #2 Use the graph of the function of degree 5 in Figure 10 to identify the zeros of the function and their multiplicities. Answer: The graph has a zero of -5 with multiplicity 3, a zero of -1 with multiplicity 2, and a zero of 3 with multiplicity 4.	Typo
Chapter 5: Polynomial and Rational Functions, Section: Dividing Polynomials, Example 2: There is a sign error in the line that says "multiply 3x - 2 by 5x. It should have a -10x, instead of the written +10x.	Revise "+" to "-" in the fourth line of the solution for Example 2 "Using Long Division to Divide a Third-Degree Polynomial" as follows: ... -(15x^2 - 10x) ______ Multiply 3x - 2 by 2x^2	Typo
Chapter 5: Polynomial and Rational Functions, Section: Zeros of Polynomial Functions, Example 9: Solution to Example 5.47: Plus or minus 1 not included in list of possible rational zeros.	Add "+ - 1" to the list of possible rational zeros in the solution to Example 9 "Solving Polynomial Equations".	Minor
Chapter 5: Polynomial and Rational Functions, Section: Rational Functions, Example: Identifying Horizontal and Slant Asymptotes: Example 5.54 b: The example uses Synthetic Division to find the quotient for the slant asymptote. While the quotient is correct the wrong divisor was used. The example used a +2 when it should have been a -2. It goes on to state the quotient is x -2 and the remainder is thus the slant asymptote is y = -x -2. The quotient is really x - 6 with a remainder of 13 and the slant asymptote y = x -6	Revise the solution to Example 5.54 "Identifying Horizontal and Slant Asymptotes" part b. as follows: Solution ... b. -2 | 1 - 4 1 __ | -2 12 __ 1 -6 13 The quotient is x - 6 and the remainder is 13. There is a slant asymptote at y = x - 6.	Minor
Chapter 5: Polynomial and Rational Functions, Section: Inverses and Radical Functions, Example 7: On the graph, the y-intercept is not (0, 6), but (0, sqrt(6)).	Revise the solution to Example 7 "Finding the Domain of a Radical Function Composed with a Rational Function" as follows: There is a y-intercept at (0, sqrt[6]).	Typo

Chapter 5: Polynomial and Rational Functions, Practice Test #11: The answer provided for problem 11 seems to be incorrect. There is indeed a root of 0 with multiplicity of 4, but the other roots are complex, not 3. If you evaluate the polynomial for 3, the result is 1458 which is not zero. see: http://www.wolframalpha.com/input/?i=y%3D2x%5E6-6x%5E5%2B18x%5E4	Revise the second coefficient in exercise 11 from 6 to 12 as follows: 11. 2x^6 - 12x^5 + 18x^4	Typo
Chapter 6: Exponential and Logarithmic Functions, Section: Exponential Functions, Example 6: Graph does not go through (2,12) and it should as that is the second point used in the example to find b.	Revise the graph for Example 6 "Writing an Exponential Function Given Its Graph" so that it goes through the point (2, 12).	Typo
Chapter 6: Exponential and Logarithmic Functions, Section: Exponential Functions, Subsection: Evaluating Functions with Base e: In the table, once per hour is 8760 times not 8766, once per minute compound is 525,600 times not 525,960, once per second is 31536000 times not 31557600.	Revise Table 5 as follows: ...Examine the value of $1 invested at 100% interest for 1 year, compounded at various frequencies, listed in Table 5. Frequency A(t) = (1 +[1/n])^n Value Hourly A(t) = (1 +[1/8760])^8760 $2.718127 Once per min A(t) = (1 +[1/525600])^525600 $2.718279 Once per sec A(t) = (1 +[1/31536000])^31536000 $2.718282	Typo
Chapter 6: Exponential and Logarithmic Functions, Section: Graphs of Exponential Functions: the second row of the table about 1/3 of the way down the page says f(x)=2x. The x should be raised to an exponent. That is, f(x)=2^x	Revise to say: f(x)=2^x	Typo

Chapter 6: Exponential and Logarithmic Functions, Section: Logarithmic Functions, Subsection: Using Common Logarithms: There is an error in the last line of the definition of the natural logarithm. It should say: Since the functions y=e^x and y=ln(x) are inverse functions ... and ... e^(ln(x))=x for x>0.	Revise the last sentence in the Definition of the Natural Logarithm as follows: Since the functions y = e^x and y = ln(x) are inverse functions, ln(e^x) = x for all x and e = x for x > 0.	Typo
Chapter 6: Exponential and Logarithmic Functions, Section: Exponential and Logarithmic Models: In example 6.66 on page 757, at the end of the example, the text says: ln(0.5)/5730 = -1.2097 is negative, as expected in the case of exponential decay. It should say: ln(0.5)/5730 = -1.2097x10^-4 is negative, as expected in the case of exponential decay. or ln(0.5)/5730 = -.00012097 is negative, as expected in the case of exponential decay.	Revise to say: ln(0.5)/5730 = -1.2097x10^-4	Typo
Chapter 8: Analytic Geometry, Section: The Parabola, Figure 5: The graph of the parabola that opens to the left in Figure 5 needs to be revised. The vertex is at (0,0) but the y-axis shown doesn't go through the point.	In the online text, revise the graph of the parabola on the left in Figure 5 to show the y-axis at point 0, 0.	Typo