Precalculus Release Notes 2017

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Errata:

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

Issue	Resolution	Severity
Chapter 1: Functions, Section, Functions and Function Notation, Table 1.14: For 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. axis "-f(-t)"	Revise Table 1.14 so that all graphs for Toolkit functions indicate with arrows the direction in which the function continues.	Typo
Chapter 1: Functions, Section: Functions and Function Notation, Exercise 71: Section Exercises, the 12th exercise under the Numeric headline is f(x)= 3 + the square root of (x+3). Under the solutions, it says that f(1)=4.5. However, f(1)=5 because the square root of (1+3)= square root of (4) = 2 and 3+2=5.	In the web view, revise the solution for f(1) in exercise 71 as follows: 71. f(x) = 3 + sqrt(x +3) Solution f(1) = 5	Typo
Chapter 1: 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.	Minor

Chapter 1: Functions, Section: Composition of Functions, Figures 3 and 4: Somewhat confusing labels on graphs: The y axis is labeled f(x) but the functions are labeled h(x), g(x), etc.	Label graph 34 "f" and graph 4 "g".	Typo
Chapter 1: Functions, Section: Composition of Functions, Example 9: Example 1.47 says at the end: "It also shows that the domain of f?g can contain values that are not in the domain of f, though they must be in the domain of g." The above statement seems wrong, the domain of f?g *cannot* contain values that are not in the domain of f. But difficult to check with the example since the entire algebra of the example's solution is horribly wrong, as expressed by another reviewer in a separate comment	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].	Critical
Chapter 1: Functions, Section: Transformations 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)".	Minor

Chapter 1: Functions, Sections: 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) and (-1,-1) after we apply the transformations.)	Revise the solution to Example 1.59 "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 1: Functions, Section: Transformation of Functions, Section: Inverse Functions: First: 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 1: Functions, Section: Inverse Functions, Section Exercises #16: In the formula for f(x) should be f(x)=x/(2+x), so that f and g are inverses.	Revise exercise 16 as follows: "Given f(x) = x/(2+x) and g(x) = (2x)/(1 ? x)..."	Typo

Chapter 2: Linear Functions, Section: Modeling with Linear Functions, Section Exercises # 19: For the following exercises, consider this scenario: The weight of a newborn is 7.5 pounds. The baby gained one-half pound a month for its first year. question 19:Find the linear function that models the baby's weight?W??W?as a function of the age of the baby, in months,?t. answer: W(t) = 7.5t + .5 Correct answer: W(t) = .5t + 7.5	Revise the solution to exercise 19 as follows: 19. Find the linear function that models the baby's weight, W, as a function of the age of the baby, in months, t. Solution: W(t) = .5t + 7.5	Typo
Chapter 3: 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 3: 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 3: Polynomial and Rational Functions, Section: Graphs of Polynomial Functions, Try It #2: 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 3: 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	Minor
Chapter 3: Polynomial and Rational Functions, Section: Zeros of 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".	Typo
Chapter 3: Polynomial and Rational Functions, Section: Rational Functions, Example: Identifying Horizontal and Slant Asymptotes: Example 3.65 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 3.65 "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.	Typo
Chapter 3: 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 3: Polynomial and Rational Functions, Practice Test #11: 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	Minor

Chapter 3: Polynomial and Rational Functions, Practice Test #20: "It's y-intercept is (0, 12)" Remove the apostrophe	Revise "it's" to "its".	Typo
Chapter 4: Exponential and Logarithmic Functions, Section: Exponential Functions, Subsection: Defining an Exponential Function: A study found that the percent of the population who are vegans in the United States doubled from 2009 to 2011. In 2011, 2.5% of the population was vegan, adhering to a diet that does not include any animal products—no meat, poultry, sh, dairy, or eggs. If this rate continues, vegans will make up 10% of the U.S. population in 2015, 40% in 2019, and 80% in 2050. The last year should be 2021, not 2050.	In the first paragraph, revise the year given for 80% of the U.S. population being vegan from 2050 to 2021.	Minor
Chapter 4: 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 4: Exponential and Logarithmic Functions, Section: Exponential Functions, Subsection: Evaluating Functions with Base e: 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 4: Exponential and Logarithmic Functions, Section: Exponential Functions, Subsection: Using Natural 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 5: Trigonometric Functions: Section: The Unit Circle: Figure 17: Unit Circle diagram says 90, pi/2, (0,-1). Should say 90, pi/2, (0,1).	Revise "90, pi/2, (0,-1)" to "90, pi/2, (0,1)" in Figure 17 Special angles and coordinates of corresponding points on the unit circle.	Typo
Chapter 5: Trigonometric Functions: Section: The Other Trigonometric Functions: Try It #6: The problem is written as "Simplify tan t(cos t)." Suggest to write as "Simplify (tan t)(cos t)." to remove any ambiguity if the tangent function or if the angle 't' are being multiplied by (cos t).	Revise the Try It after Example 6 "Using Identities to Simplify Trigonometric Expressions" to include parentheses around "tan t" as follows: Try It #6 Simplify (tan t)(cos t).	Minor
Chapter 5: Unit Circle: Sine and Cosine Functions: Section: Right Triangle Trigonometry: Subsection: Using Right Triangle Trigonometry to Solve Applied Problems: First Figure: angle of depression is modeled incorrectly. Should be from the horizontal, not from the vertical.	Revise the first figure in subsection "Using Right Triangle Trigonometry to Solve Applied Problems" to correctly show the angle of depression as the angle between the horizontal and the line from the object to the observer's eye.	Typo
Chapter 5: Unit Circle: Sine and Cosine Functions: Section: Right Triangle Trigonometry: Exercise 45: Problem shows a side length of 119 as the side length opposite the angle of 70 degrees. Solution uses the side length of 119 as the hypotenuse of the right triangle with 70 degrees.	Revise the solution to exercise 45 to "200.673".	Unspecified

Chapter 5: Unit Circle: Sine and Cosine Functions: Section: Right Triangle Trigonometry: Exercise 49...change "tower" to "monument", as it is unclear and misleading. A 400-foot tall monument is located in the distance. From a window in a building, a person determines that the angle of elevation to the top of the monument is 18°, and that the angle of depression to the bottom of the TOWER is 3°. How far is the person from the monument?	Revise "monument" to "tower" in exercise 49 as follows: 49. A 400-foot tall monument is located in the distance. From a window in a building, a person determines that the angle of elevation to the top of the monument is 18°, and that the angle of depression to the bottom of the tower is 3°. How far is the person from the monument?	Typo
Chapter 6: Periodic Functions: Section: Graphs of the Other Trigonometric Functions: table, and possibly elsewhere, misstates the range of y = Atan(Bx - C) + D ditto page 535 for y = Acot(Bx - C) + D	Revise the range in the boxes "features of the graph of y = Atan(Bx - C) + D" and "features of the graph of y = Acot(Bx - C) + D" to "(negative infinity, infinity)".	Critical
Chapter 7: Trigonometric Identities and Equations: Section: Double-Angle, Half-Angle, and Reduction Formulas: Exercises: Problem 3: The plus/minus sign is not stated in the formula for tan(x/2) and should be added.	In exercise 3, add a + - sign before the half-angle formula for tan.	Minor
Chapter 7: Trigonometric Identities and Equations: Section: Double-Angle, Half-Angle, and Reduction Formulas: Subsection: Using Half-Angle Formulas to Find Exact Values: On the derivation for the power reduction identity for sine squared, the second step has a misuse of parentheses. The right side of the equation should have a "cos(2*ALPHA/2)" not the way it's currently shown.	In the derivation for the half-angle formula for sine, revise the second step as follows: sin^2(alpha/2) = [1 - cos(2 x alpha/2)]/2	Typo

Chapter 7: Trigonometric Identities and Equations: Section: Double-Angle, Half-Angle, and Reduction Formulas: Exercises: The quadrant in which an angle lies is not sufficient information to determine the quadrant in which half the angle lies. (Remember coterminal angles??) Problems need to be more explicit.	Revise the instructions for exercises 20 - 23 as follows: "For the following exercises, find the exact values of ... without solving for x, when 0 <= x <= 360 degrees."	Typo
Chapter 8: Further Applications of Trigonometry: Section: Non-Right Triangles: Law of Sines, Example 2: angles gamma and gamma-prime are called supplementary with corresponding values 14.9 and 95.1 degrees	In the solution to Example 2 "Solving an Oblique SSA Triangle", revise the sentence "Since y' is supplementary to y, we have..." to "Since y' is supplementary to alpha and beta', we have...".	Typo
Chapter 10: Analytic Geometry: Section: The Parabola, Figure 5: The graph of the parabola that opens to the left in Figure 10.31 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.	Minor
Chapter 11: Sequences, Probability and Counting Theory: Section: Arithmetic Sequences: Exercises: In the exercises for sequences, sequences are given the name "a_n" rather than "a". The notation "a_n" refers to a single element of the sequence, not the entire sequence. Thanks for offering such an excellent product for free.	For exercises 28 - 55, revise "a_n" to "a".	Minor