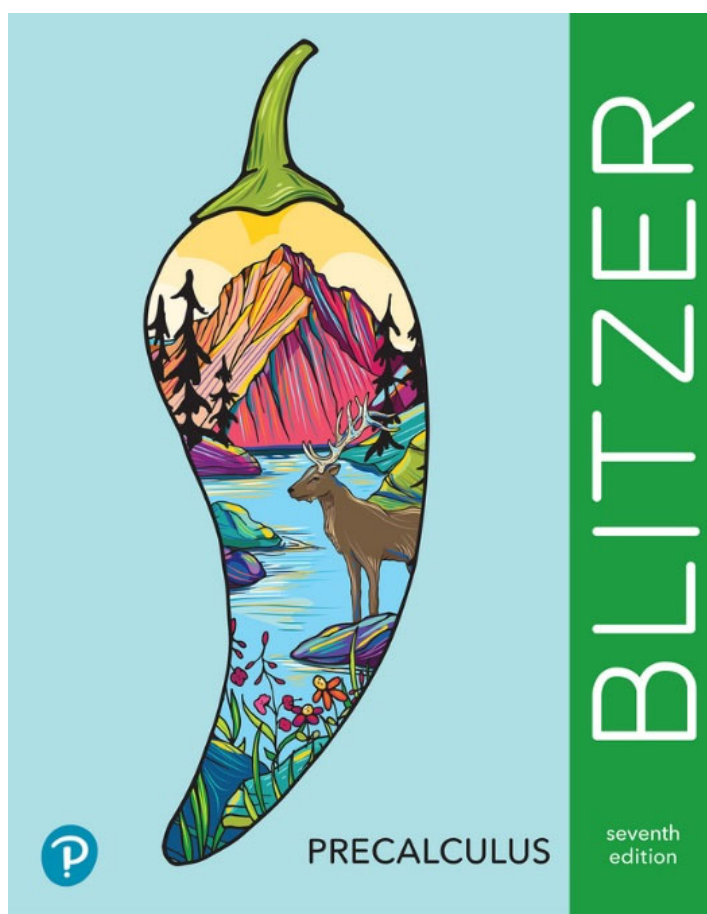


A Correlation of
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To the
North Carolina Math
Standard Course of Study 2019
Precalculus

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To the North Carolina Math Standards Precalculus**

North Carolina Standard Course of Study 2019 Precalculus	Precalculus 7th Edition, ©2022
Standards for Mathematical Practice	
1 Make sense of problems and persevere in solving them.	SE/TE: 5-6, 9, 13, 21, 24-25, 33, 36-38, 40, 48, 50, 52, 58-59, 61-64, 74, 77, 79, 93-94, 99, 101-105, 111-113, 115, 118, 120, 130, 132, 134, 151, 153-155, 158, 166, 175, 184-186, 188, 191-193, 203, 205, 207, 224, 232-234, 237-238, 247-248, 250, 256, 263, 265, 274, 277, 283, 286, 312, 314, 316, 323, 325-326, 338, 340, 344, 346, 356, 362, 369-370, 374, 376-377, 385-386, 389-390, 394, 412-413, 455, 473, 482, 485, 496, 501, 505, 525-526, 528-529, 533, 544, 556-557, 559, 569, 572, 588, 591, 593, 619, 625-713, 724-725, 729, 739, 772, 776, 783, 786-787, 792, 817-818, 820, 823, 833, 837, 847-849, 852-853, 859, 869, 894-897, 904, 923, 936, 939, 947, 953, 955-956, 970, 984-985, 991-992, 1000, 1003, 1008, 1016-1017, 1055, 1076-1080, 1105, 1115
2 Reason abstractly and quantitatively.	SE/TE: 19-20, 125-126, 141, 161-162, 181, 201, 217, 228, 244-245, 260, 271-272, 281-282, 367-368, 381-382, 404-405, 418, 428, 453, 468, 478-479, 493, 511, 538, 635-636, 646-647, 669, 680, 692, 700, 716, 735, 744, 756, 768, 781, 796, 806, 877-878, 885-886, 907, 916, 932, 946, 959-960, 982, 997, 1012, 1024, 1034, 1045, 1064, 1075, 1090, 1099-1100
3 Construct viable arguments and critique the reasoning of others.	SE/TE: 19-20, 32, 47, 57, 69, 87, 109, 125-126, 141, 161-162, 181, 201, 217, 228, 244-245, 260, 271-272, 281-282, 295-296, 318, 335, 336, 354, 367-368, 381-382, 404-405, 418, 428, 453, 468, 478-479, 493, 511, 538, 554, 568, 581, 603-604, 617, 635-636, 646-647, 669, 680, 692, 700, 716, 735, 744, 756, 768, 781, 796, 806, 835, 843-844, 854, 864, 877-878, 885-886, 907, 916, 932, 946, 959-960, 982, 997, 1012, 1024, 1034, 1045, 1064, 1075, 1090, 1099-1100, 1107-1108, 1119, 1134-1135
4 Model with mathematics.	SE/TE: 5, 11, 59, 71, 90, 131, 169, 206, 231, 235, 264, 266, 340, 469-470, 475, 483, 532, 550, 571, 574-576, 626, 637, 663, 677, 683, 686, 737, 747, 778, 790, 803, 823, 839, 908, 912, 921, 926, 928, 948, 970, 984
5 Use appropriate tools strategically.	SE/TE: 7, 26, 28, 42-43, 161, 168, 170, 212-213, 251, 276, 278, 284, 287-290, 330-331, 343, 364, 376, 389, 393-394, 406, 408, 410-411, 413, 415, 446, 476, 480, 483-484, 487, 500, 502, 524, 589, 594, 596, 599, 637, 659, 673, 694, 704-706, 709, 749-750, 758, 763, 819, 840, 851, 868, 873, 900, 903, 919-920, 924, 935, 940-941, 952, 971, 988, 1001-1002, 1004-1005, 1019, 1022, 1027, 1030, 1039-1040, 1056-1057, 1060, 1071, 1081, 1102-1103, 1112, 1116

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6 Attend to precision.	SE/TE: 18-19, 31, 46-47, 139-141, 280-281, 318, 333-335, 352-353, 366-367, 380-381, 402-404, 416-417, 427, 451-452, 467, 478, 491-492, 507-510, 537-538, 553, 566, 602, 615-616, 634-635, 645-646, 679-680, 691, 699, 715-716, 733-735, 742-744, 755, 767, 781, 794-796, 805, 981, 996, 1010-1011, 1033-1034, 1044
7 Look for and make use of structure.	SE/TE: 5, 11, 59, 71, 90, 131, 169, 206, 231, 235, 264, 266, 340, 469-470, 475, 483, 532, 550, 571, 574-576, 626, 637, 663, 677, 683, 686, 737, 747, 778, 790, 803, 823, 839, 908, 912, 921, 926, 928, 948, 970, 984
8 Look for and express regularity in repeated reasoning.	SE/TE: 19, 31, 47, 56, 67, 68-69, 86-87, 109, 125, 141, 161, 168, 181, 201, 216, 228, 244, 260, 272, 281, 295, 318, 335, 353, 367, 381, 404, 417, 428, 452-453, 468, 478, 492-493, 510, 538, 553-554, 566-567, 581, 602-603, 616, 635, 646, 669, 680, 691, 699, 716, 735, 744, 755-756, 767-768, 781, 796, 806, 835, 843, 854, 864, 877, 885, 907, 916, 931, 945-946, 959, 981, 997, 1011, 1023, 1034, 1044, 1064, 1075, 1090, 1099, 1107, 1119, 1134
9 Use strategies and procedures flexibly.	SE/TE: 5-6, 9, 13, 21, 24-25, 33, 36-38, 40, 48, 50, 52, 58-59, 61-64, 74, 77, 79, 93-94, 99, 101-105, 111-113, 115, 118, 120, 130, 132, 134, 151, 153-155, 158, 166, 175, 184-186, 188, 191-193, 203, 205, 207, 224, 232-234, 237-238, 247-248, 250, 256, 263, 265, 274, 277, 283, 286, 312, 314, 316, 323, 325-326, 338, 340, 344, 346, 356, 362, 369-370, 374, 376-377, 385-386, 389-390, 394, 412-413, 455, 473, 482, 485, 496, 501, 505, 525-526, 528-529, 533, 544, 556-557, 559, 569, 572, 588, 591, 593, 619, 625-713, 724-725, 729, 739, 772, 776, 783, 786-787, 792, 817-818, 820, 823, 833, 837, 847-849, 852-853, 859, 869, 894-897, 904, 923, 936, 939, 947, 953, 955-956, 970, 984-985, 991-992, 1000, 1003, 1008, 1016-1017, 1055, 1076-1080, 1105, 1115
10 Reflect on mistakes and misconceptions.	SE/TE: 18-19, 31, 46-47, 125-126, 139-141, 161-162, 181, 201, 217, 228, 244-245, 260, 271-272, 280-282, 318, 333-335, 352-353, 366-367, 380-381, 402-404, 416-417, 427, 451-452, 467, 478, 491-492, 507-510, 537-538, 553, 566, 602, 615-616, 634-635, 645-646, 679-680, 691, 699, 715-716, 733-735, 742-744, 755, 767, 781, 794-796, 805, 981, 996, 1010-1011, 1033-1034, 1044-1045, 1064, 1075, 1090, 1099-1100

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Number and Quantity (N)	
PC.N.1 Apply properties of complex numbers and the complex number system.	
PC.N.1.1 Execute the sum and difference algorithms to combine complex numbers.	SE/TE: 311-315, 317-318, 769-770
PC.N.1.2 Execute the multiplication algorithm with complex numbers.	SE/TE: 312-315, 317-318, 769-770, 773-776, 779-781, 1199
PC.N.2 Apply properties and operations with matrices.	
PC.N.2.1 Execute the sum and difference algorithms to combine matrices of appropriate dimensions.	SE/TE: 918-922, 926-928, 929-932
PC.N.2.2 Execute associative and distributive properties to matrices.	SE/TE: 920-922, 926-928, 929-932
PC.N.2.3 Execute commutative property to add matrices.	SE/TE: 920-922, 929-932
PC.N.2.4 Execute properties of matrices to multiply a matrix by a scalar.	SE/TE: 920-922, 927-928, 929-932, 936-937
PC.N.2.5 Execute the multiplication algorithm with matrices.	SE/TE: 922-925, 927-928, 929-932, 933-937, 940-943, 944-946
PC.N.3 Understand properties and operations with vectors.	
PC.N.3.1 Represent a vector indicating magnitude and direction.	SE/TE: 782-792, 793-796, 797-804, 805-806, 1200
PC.N.3.2 Execute sum and difference algorithms to combine vectors.	SE/TE: 784-792, 793-796, 798-802, 805-806, 1200
Algebra (A)	
PC.A.1 Apply properties of solving inequalities that include rational and polynomial expressions in one variable.	
PC.A.1.1 Implement algebraic (sign analysis) methods to solve rational and polynomial inequalities.	SE/TE: 406-415, 416-418
PC.A.1.2 Implement graphical methods to solve rational and polynomial inequalities.	SE/TE: 407-408, 410-415, 416-418

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PC.A.2 Apply properties of solving equations involving exponential, logarithmic, and trigonometric functions.	
PC.A.2.1 Use properties of logarithms to rewrite expressions.	SE/TE: 455-457, 461-464, 465-468, 469-477, 477-479, 480-489, 490-494
PC.A.2.2 Implement properties of exponentials and logarithms to solve equations.	SE/TE: 480-489, 490-494
PC.A.2.3 Implement properties of trigonometric functions to solve equations including inverse trigonometric functions, double angle formulas, and Pythagorean identities.	SE/TE: 547-548, 562-563, 566-568, 638-640, 644-646, 702-713, 714-716, 724-731, 732-735, 736-740, 741-744, 792, 799-800
PC.A.2.4 Implement algebraic techniques to rewrite parametric equations in cartesian form by eliminating the parameter.	SE/TE: 1027-1030, 1032-1035
Functions (F)	
PC.F.1 Understand key features of sine, cosine, tangent, cotangent, secant and cosecant functions.	
PC.F.1.1 Interpret algebraic and graphical representations to determine key features of transformed sine and cosine functions. Key features include: amplitude, domain, midline, phase shift, frequency, period, intervals where the function is increasing, decreasing, positive or negative, relative maximums and minimums.	SE/TE: 542-543, 548-549, 571-573, 583-600, 601-603, 612-613
PC.F.1.2 Interpret algebraic and graphical representations to determine key features of tangent, cotangent, secant, and cosecant. Key features include: domain, frequency, period, intervals where the function is increasing, decreasing, positive or negative, relative maximums and minimums, and asymptotes.	SE/TE: 571-573, 604-613, 614-617
PC.F.1.3 Integrate information to build trigonometric functions with specified amplitude, frequency, period, phase shift, or midline with or without context.	SE/TE: 585-600, 601-603, 606-613, 614-617, 641-643, 645-646
PC.F.1.4 Implement graphical and algebraic methods to solve trigonometric equations and inequalities in context with support from technology.	SE/TE: 547-548, 562-563, 566-568, 638-640, 644-646, 702-713, 714-716, 724-731, 732-735, 736-740, 741-744

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PC.F.2 Apply properties of a unit circle with center (0,0) to determine the values of sine, cosine, tangent, cotangent, secant, and cosecant.	
PC.F.2.1 Use a unit circle to find values of sine, cosine, and tangent for angles in terms of reference angles.	SE/TE: 539-550, 551-554, 555-556, 568-579, 579-581
PC.F.2.2 Explain the relationship between the symmetry of a unit circle and the periodicity of trigonometric functions.	SE/TE: 548-549, 553-554, 583-584
PC.F.3 Apply properties of trigonometry to solve problems involving all types of triangles.	
PC.F.3.1 Implement a strategy to solve equations using inverse trigonometric functions.	SE/TE: 638-640, 644-646, 727-729, 738-739, 792, 799-800
PC.F.3.2 Implement the Law of Sines and the Law of Cosines to solve problems.	SE/TE: 724-731, 732-735, 736-740, 741-744, 1198-1199
PC.F.3.3 Implement the Pythagorean identity to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	SE/TE: 658-667, 668-669, 670-677, 678-680, 681-688, 689-692, 693-696, 697-701
PC.F.4 Understand the relationship of algebraic and graphical representations of exponential, logarithmic, rational, power functions, and conic sections to their key features.	
PC.F.4.1 Interpret algebraic and graphical representations to determine key features of exponential functions. Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, limits, and asymptotes.	SE/TE: 440-449, 450-453, 454-455, 480, 483, 487-488, 491-494, 495-506, 507-510
PC.F.4.2 Integrate information to build exponential functions to model phenomena involving growth or decay.	SE/TE: 440, 444, 446-449, 450-453, 487-488, 495-506, 507-510
PC.F.4.3 Interpret algebraic and graphical representations to determine key features of logarithmic functions. Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, continuity, limits, and asymptotes.	SE/TE: 454-464, 465-468, 469-477, 477-479, 484, 489, 491-494

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PC.F.4.4 Implement graphical and algebraic methods to solve exponential and logarithmic equations in context with support from technology.	SE/TE: 480-489, 490-494
PC.F.4.5 Interpret algebraic and graphical representations to determine key features of rational functions. Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, continuity, limits, and asymptotes.	SE/TE: 289, 384-399, 400-405, 411-413, 416-418, 419, 423-426, 427-429
PC.F.4.6 Implement graphical and algebraic methods to solve optimization problems given rational and polynomial functions in context with support from technology.	SE/TE: 289, 397-399, 402-405, 413-415, 416-418
PC.F.4.7 Construct graphs of transformations of power, exponential, and logarithmic functions showing key features.	SE/TE: 189, 231, 233, 235, 237-238
PC.F.4.8 Identify the conic section (ellipse, hyperbola, parabola) from its algebraic representation in standard form.	SE/TE: 968, 970-973, 979, 981, 983-986, 988, 994, 997, 999-1001, 1009, 1011
PC.F.4.9 Interpret algebraic and graphical representations to determine key features of conic sections (ellipse: center, length of the major and minor axes; hyperbola: vertices, transverse axis; parabola: vertex, axis of symmetry).	SE/TE: 968-979, 980-982, 983-994, 995-997, 998-1008, 1009-1012, 1014, 1016, 1019, 1021-1022, 1023-1024, 1025-1027, 1028-1029, 1030, 1032-1034, 1035-1042, 1043-1044, 1201
PC.F.5 Apply properties of function composition to build new functions from existing functions.	
PC.F.5.1 Implement algebraic procedures to compose functions.	SE/TE: 246-257, 258-260, 261-263, 269, 628-632
PC.F.5.2 Execute a procedure to determine the value of a composite function at a given value using algebraic, graphical, and tabular representations.	SE/TE: 251-257, 258-260, 262-263, 628-632
PC.F.5.3: Implement algebraic methods to find the domain of a composite function.	SE/TE: 246-251, 254-256, 258-260, 263, 268, 628-629

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PC.F.5.4 Organize information to build models involving function composition.	SE/TE: 246-248, 251-253, 259-260, 261
PC.F.5.5 Deconstruct a composite function into two functions.	SE/TE: 247-248, 256-257, 258-260
PC.F.5.6 Implement algebraic and graphical methods to find an inverse function of an existing function, restricting domains if necessary.	SE/TE: 261-268, 269-271, 454-455, 618-632, 633-635
PC.F.5.7 Use composition to determine if one function is the inverse of another function.	SE/TE: 261, 263-264, 268, 269-271
PC.F.6 Apply mathematical reasoning to build recursive functions to model and solve problems.	
PC.F.6.1 Use algebraic representations to build recursive functions.	SE/TE: 1054, 1056-1057, 1062, 1064-1065, 1066-1067, 1069-1071, 1073, 1075, 1076-1077
PC.F.6.2 Construct a recursive function for a sequence represented numerically.	SE/TE: 1066-1067, 1073, 1075, 1077
PC.F.7 Apply mathematical reasoning to build parametric functions and solve problems.	
PC.F.7.1 Implement algebraic methods to write parametric equations in context.	SE/TE: 1025-1026, 1031, 1033-1034
PC.F.7.2 Implement technology to solve contextual problems involving parametric equations.	SE/TE: 1027, 1030, 1034

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