

Precalculus 2nd Edition Standard Lesson Plan Overview

The Standard Lesson Plan allocates 90 days for each semester.

Key:

- **Assessments**
- *Student Edition* features:
 - **TC:** Technology Corner
 - **HC:** Historical Connection
 - **BPM:** Biblical Perspective of Mathematics
 - **DA:** Data Analysis
- *Biblical worldview topics in the Teacher Edition*

Day	Topic	Pages	Assessment	Biblical Worldview
Chapter 1 Analyzing Functions				
1	Introduction	v-1		
2	1.1 Relations and Functions TC: Multiple Representations	2-8 6		<ul style="list-style-type: none"> • gaining a better understanding of infinity through knowing God • declaring God's infinite nature and recognizing His creation (Ps. 90:2)
3-4	HC: Functions 1.2 Linear Functions BPM: The Gift of Mathematics	9 10-16 17		<ul style="list-style-type: none"> • explaining the laws of the physical world from a biblical worldview (Gen. 1:1, 27) • recognizing the flaws in Descartes's reasoning • viewing mathematics as a divine gift, an intrinsic part of His creation (Ps. 104:24)
5-6	1.3 Piecewise Functions and Continuity	18-24	Quiz 1A (1.1-1.2)	
7	1.4 Power Functions and Variations	25-31		
8-9	1.5 Transformations of Functions	32-38	Quiz 1B (1.3-1.4)	
10	1.6 Quadratic Functions	39-45		
11-12	1.7 Function Operations	46-51	Quiz 1C (1.5-1.6)	<ul style="list-style-type: none"> • identifying underlying fundamental laws evident in God's creation • recognizing how technology is making the fulfillment of prophecy more imminent (Rev. 13:17)

Day	Topic	Pages	Assessment	Biblical Worldview
13–14	1.8 Parametric Equations and Inverses	52–58		
15–16	1.9 Modeling with Functions	59–66	Quiz 1D (1.7–1.8)	
17	DA: Home Run	67		<ul style="list-style-type: none"> recognizing the human limitation of mathematics and mathematical models
18	Chapter 1 Review	68–70	Quiz 1E (1.9)	
19	Chapter 1 Test			

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Chapter 2 Radical, Polynomial, and Rational Functions				
20	2.1 Radical Functions and Equations	72–77		
21	2.2 Polynomial Functions	78–85		
22	TC: Discontinuities	85	Quiz 2A (2.1–2.2)	
23	2.3 The Remainder and Factor Theorems HC: Symbols	86–92 93		<ul style="list-style-type: none"> • understanding that elements of mathematics transcend human intellect • creating math symbols to describe what God has created
24–25	2.4 Zeros of Polynomial Functions BPM: Math's Divine Nature	94–101 102–3	Quiz 2B (2.3–2.4)	<ul style="list-style-type: none"> • understanding how Christianity's fundamental doctrines apply to math • learning about key common attributes of God and math • understanding infallible transcendent mathematics
26	2.5 Rational Functions	104–11		<ul style="list-style-type: none"> • recognizing how our limited understanding inspires awe and worship of God (Job 38–41)
27	2.6 Solving Rational Equations	112–17		<ul style="list-style-type: none"> • understanding universal mathematical truth and the goodness in its applications
28–29	2.7 Nonlinear Inequalities	118–23	Quiz 2C (2.5–2.6)	
30	DA: The Housing Market	124	Quiz 2D (2.7)	<ul style="list-style-type: none"> • using biblical wisdom and discernment in home buying (Prov. 22:3, 7)
31	Chapter 2 Review	125–26		
32	Chapter 2 Test			

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Chapter 3 Exponential and Logarithmic Functions				
33	3.1 Exponential Functions	128–35		
34	3.2 Logarithmic Functions	136–41		
35	HC: Napier’s Artificial Numbers	142	Quiz 3A (3.1–3.2)	<ul style="list-style-type: none"> • predicting the return of Christ (Matt. 24:36)
36	3.3 Properties of Logarithms	143–48		
37–38	3.4 Exponential and Logarithmic Equations BPM: Glorifying God with Math	149–54 155		<ul style="list-style-type: none"> • lending and investing money (Deut. 15:1–7; 23:19; Matt. 25:14–30) • glorifying God through math (1 Cor. 10:31) • fulfilling the Creation Mandate (Gen. 1:26–28; Ps. 8)
39–40	3.5 Exponential, Logistic, and Logarithmic Models TC: Transformed Data	156–65 162	Quiz 3B (3.3–3.4)	
41	DA: A World Population Crisis?	166–67	Quiz 3C (3.5)	<ul style="list-style-type: none"> • responding biblically to world population growth (Gen. 1:27–28; Matt. 6:3, 11–32; 28:19; Jer. 1:5; Gal. 5:13–14; Phil. 4:9; 1 Thess. 4:16) • meeting the needs of the poor and sharing the gospel
42	Chapter 3 Review	168–70		
43	Chapter 3 Test			
44	Review for First Quarter Exam (Chapters 1–3)			
45	First Quarter Exam			

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Chapter 4 Trigonometric Functions				
46	4.1 Angle Measure and Arc Length	172–78		
47	4.2 Right Triangle Trigonometry	179–86		
48	HC: Trigonometry	187	Quiz 4A (4.1–4.2)	
49	4.3 Extending Trigonometric Functions TC: Parametric Graphs of Trigonometric Functions	188–95 196		<ul style="list-style-type: none"> identifying periodic functions in creation (Gen. 8:22)
50–51	4.4 Sinusoidal Functions	197–205		<ul style="list-style-type: none"> recognizing that life begins before birth (Jer. 1:4–5) evaluating cyclic patterns in nature from a biblical perspective (Deut. 17:2–3; 2 Kings 23:5)
52	4.5 Graphing Other Trigonometric Functions	206–13		
53	BPM: The Utility and Value of Mathematics	214–15	Quiz 4B (4.3–4.5)	<ul style="list-style-type: none"> exploring how mathematical truth applies to the real world through recognizing God as Creator of both the universe and the human ability to describe it
54	4.6 Inverse Trigonometric Functions	216–22		<ul style="list-style-type: none"> acknowledging our inability to count the stars and grains of sand (Heb. 11:12) recognizing the involvement of math in a God-given sign of answered prayer (2 Kings 20:8–11)
55	4.7 Analyzing Combinations of Sinusoidal Functions	223–27		<ul style="list-style-type: none"> seeing how mathematical patterns appeal to our God-given sense of beauty
56	DA: Sunspots and Solar Flares	228–29	Quiz 4C (4.6–4.7)	<ul style="list-style-type: none"> responding biblically to climate change (Gen. 1:27–28; 8:20–22; Mark 12:31; Ps. 46:2–3)
57	Chapter 4 Review	230–31		
58	Chapter 4 Test			

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Chapter 5 Trigonometric Identities and Equations				
59	5.1 Fundamental Identities	233–39		<ul style="list-style-type: none"> exploring unity and beauty in mathematics established by God in His creation
60	5.2 Verifying Trigonometric Identities	240–45		<ul style="list-style-type: none"> using logical reasoning developed through math to live biblically
61	5.3 Solving Trigonometric Equations	246–51		
62	BPM: The Unity and Beauty of Mathematics	252–53	Quiz 5A (5.1–5.3)	<ul style="list-style-type: none"> acknowledging evidence of God’s unity and beauty in His universe
63	5.4 Sum and Difference Identities	254–60		
64–65	5.5 Multiple Angle Identities	261–67		
66	HC: Harmonic Analysis	268	Quiz 5B (5.4–5.5)	<ul style="list-style-type: none"> recognizing math as more than a product of the human mind learning about a mathematician’s testimony of faith in Christ
67–68	5.6 Law of Sines TC: Exploring the Law of Sines	269–75 273		
69	5.7 Law of Cosines	276–81		
70	DA: Refraction, Reflection, and Fiber Optics	282–83	Quiz 5C (5.6–5.7)	<ul style="list-style-type: none"> understanding the nature and source of light (Gen. 1:3–4; James 1:17)
71	Chapter 5 Review	284–85		
72	Chapter 5 Test			

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Chapter 6 Vectors, Polar Graphs, and Complex Numbers				
73	6.1 Vectors in the Plane	287–93		
74–75	6.2 Dot Products	294–300		
76	BPM: Truth and Mathematical Proof	301–2	Quiz 6A (6.1–6.2)	<ul style="list-style-type: none"> • acknowledging mathematical proof as an instrument of discovering truth (Phil. 4:8) • seeking truth through God’s Word v. worldly thinking (John 17:17; Phil. 4:8)
77	6.3 Vectors in Space	303–8		<ul style="list-style-type: none"> • recognizing manmade mathematical models fail to completely describe God’s creation
78–79	6.4 Polar Coordinates TC: Graphing Polar Functions	309–14 313	Quiz 6B (6.3)	
80	6.5 Graphs of Polar Equations	315–22		
81	HC: Complex Numbers	323	Quiz 6C (6.4–6.5)	<ul style="list-style-type: none"> • discovering how mathematical models reflect structure and design in the world
82–83	6.6 Polar Forms of Complex Numbers	324–30		
84	DA: Fractals	331–32		<ul style="list-style-type: none"> • understanding how similar design points to a common Creator • discussing chaos theory and the importance of a person’s worldview
85	Chapter 6 Review	333–34	Quiz 6D (6.6)	
86	Chapter 6 Test			
87–89	Review for Second Quarter Exam (Chapters 4–6) or First Semester Exam (Chapters 1–6)			
90	Second Quarter Exam or First Semester Exam			

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Chapter 7 Systems and Matrices				
91	7.1 Solving Systems of Equations	336–42		
92	7.2 Matrices	343–50		<ul style="list-style-type: none"> • using math for the benefit of mankind and the glory of God
93	BPM: Direct and Indirect Deductive Reasoning	351–52	Quiz 7A (7.1–7.2)	<ul style="list-style-type: none"> • examining direct and indirect reasoning used in Scripture and in the Stein-Bahnsen debate on the existence of God (Acts 17:2; 18:4,19; 24:25; Heb. 5:14; 1 Pet. 3:15) • identifying transcendent mathematical truth as originating from God and His nature
94–95	7.3 Gaussian Elimination TC: Matrix Operations	353–60 358		
96–97	7.4 Determinants	361–68		
98	HC: Matrices and Determinants	369	Quiz 7B (7.3–7.4)	
99	7.5 Inverse Matrices	370–75		
100–101	7.6 Systems of Inequalities	376–82		<ul style="list-style-type: none"> • understanding the importance of biblical principles in decision making • using linear programming to make good decisions, maximize profit, and serve others (Luke 10:33–37; 14:28–30; Prov. 11:24–26; Matt. 5:16)
102–3	7.7 Partial Fractions	383–88	Quiz 7C (7.5–7.6)	
104	DA: Cryptology	389–90	Quiz 7D (7.7)	<ul style="list-style-type: none"> • applying biblical principles in the context of privacy rights and the need for lawful investigation
105	Chapter 7 Review	391–93		
106	Chapter 7 Test			

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Chapter 8 Analytic Geometry				
107–8	8.1 Conics and Parabolas	395–402		<ul style="list-style-type: none"> recognizing creative order as a direct result of the preeminence of Christ (Col. 1:17) knowing the origin of life (Gen. 2:7)
109	8.2 Ellipses and Circles	403–10		<ul style="list-style-type: none"> defining eccentricity as a deviation from what God has established (Titus 2:14)
110	HC: Analytic Geometry	411	Quiz 8A (8.1–8.2)	<ul style="list-style-type: none"> evaluating René Descartes’s worldview (John 17:17; 2 Pet. 1:16–21)
111	8.3 Hyperbolas TC: Graphing with Desmos	412–19 419		
112–13	8.4 Rotated Conics	420–26		
114	BPM: Counterexamples and Existence Proofs	427–28	Quiz 8B (8.3–8.4)	<ul style="list-style-type: none"> disproving false statements with counterexamples in Scripture (1 Cor. 15:13; John 20:11–18; Luke 24:36–48) discovering proof of God’s existence in creation (Rom. 1:20)
115–16	8.5 Parametric Representations	429–34		<ul style="list-style-type: none"> using math to enhance public safety
117	8.6 Polar Equations of Conics	435–40		
118	DA: Conics in Space	441–42	Quiz 8C (8.5–8.6)	<ul style="list-style-type: none"> evaluating the universe and human existence from a biblical worldview (Gen. 1:1, 27; Ps. 19:1)
119	Chapter 8 Review	443–44		
120	Chapter 8 Test			

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Chapter 9 Sequences and Series				
121–22	9.1 Introduction to Sequences and Series TC: Graphing Sequences	446–52 453		<ul style="list-style-type: none"> appreciating how the golden ratio reflects divine creation
123–24	BPM: Computer Proofs and Artificial Intelligence 9.2 Arithmetic Sequences and Series	454–55 456–62		<ul style="list-style-type: none"> viewing artificial intelligence from a biblical worldview assessing unbiblical beliefs relating to artificial intelligence
125–26	9.3 Geometric Sequences and Series HC: Binomial Expansion and Pascal’s Triangle	463–70 471	Quiz 9A (9.1–9.2)	<ul style="list-style-type: none"> using math to make wise financial decisions (Luke 14:28; Prov. 28:2) responding to suffering
127	9.4 The Binomial Theorem	472–76		<ul style="list-style-type: none"> using probabilities to augment wise stewardship
128–29	9.5 Mathematical Induction	477–84	Quiz 9B (9.3–9.4)	<ul style="list-style-type: none"> learning about our absolute God learning a method of implication in truth
130	DA: Graph Theory and Networks	485–86	Quiz 9C (9.5)	<ul style="list-style-type: none"> evaluating the proper use of big data
131	Chapter 9 Review	487–88		
132	Chapter 9 Test			
133	Review for Third Quarter Exam (Chapters 7–9)			
134	Third Quarter Exam			

Day	Topic	Pages	Assessment	Biblical Worldview
Chapter 10 Descriptive Statistics				
135	10.1 Counting Principles	490–96		<ul style="list-style-type: none"> recognizing the high risk of the lottery by using combinatory mathematics
136	10.2 Basic Probability	497–504		<ul style="list-style-type: none"> learning how God’s Word and the Holy Spirit provide guidance (Ps. 37:23; James 4:13–15) affirming that mathematical laws are discovered, not manmade responding biblically to statistical indicators (Eph. 4:32; Phil. 2:3; James 2:1–7)
137	DA: Medical Screenings and Probability	505–6	Quiz 10A (10.1–10.2)	<ul style="list-style-type: none"> upholding the sanctity of life and caring for others
138	10.3 Representing Data Graphically	507–15		<ul style="list-style-type: none"> planning while God directs our steps (Prov. 16:9)
139–40	10.4 Describing Data Numerically	516–25		<ul style="list-style-type: none"> using research to present truth
141	HC: Political Arithmetic and Probability	526	Quiz 10B (10.3–10.4)	<ul style="list-style-type: none"> reflecting on the wisdom and character of God (Rom. 1:19–20)
142–43	10.5 Data Distributions	527–33		
144–45	10.6 Normal Distributions	534–39		<ul style="list-style-type: none"> avoiding unethical use of descriptive statistics
146	BPM: Mathematical Platonism	540–41	Quiz 10C (10.5–10.6)	<ul style="list-style-type: none"> comparing Platonism and a biblical perspective of mathematical truth viewing mathematics as a direct result of God’s creation
147	Chapter 10 Review	542–44		
148	Chapter 10 Test			

Day	Topic	Pages	Assessment	Biblical Worldview
Chapter 11 Inferential Statistics				
149–50	11.1 Probability Distributions	546–54		<ul style="list-style-type: none"> • understanding that statistical interpretation is affected by worldview
151	11.2 Central Limit Theorem	555–64		<ul style="list-style-type: none"> • understanding that theorems reflect natural laws
152	HC: Mathematical Expectation	565		<ul style="list-style-type: none"> • applying biblical principles to shape worldview
153–54	11.3 Confidence Intervals	566–72	Quiz 11A (11.1–11.2)	
155–56	11.4 Hypothesis Testing	573–81		<ul style="list-style-type: none"> • avoiding bias in research
157	BPM: Logicism, Intuitionism, and Formalism	582–83	Quiz 11B (11.3–11.4)	<ul style="list-style-type: none"> • examining modern philosophies of mathematics (1 Cor. 3:11) • understanding that Christ is the foundation of all mathematical truth (Col. 1:15–17)
158	11.5 Research Studies	584–92		<ul style="list-style-type: none"> • realizing the role of moral values and judgment in inferential statistics
159	DA: Markov Chains	593–94	Quiz 11C (11.5)	<ul style="list-style-type: none"> • promoting honesty and integrity in computer programming
160	Chapter 11 Review	595–97		
161	Chapter 11 Test			

Day	Topic	Pages	Assessment	Biblical Worldview
Chapter 12 Limits, Derivatives, and Integrals				
162	12.1 Evaluating Limits	599–603		<ul style="list-style-type: none"> • viewing God as the author of infinity • recognizing the limits on our lives (Ps. 90:10)
163	12.2 Properties of Limits	604–9		<ul style="list-style-type: none"> • comparing mortal lifespan to eternity (James 4:14; Col. 3:2)
164	BPM: Mathematics and Infinity	610–11	Quiz 12A (12.1–12.2)	<ul style="list-style-type: none"> • acknowledging God’s infinite wisdom (Isa. 55:9; Rom. 11:33) • discovering order in creation (Gen. 1:1; Isa. 66:1) • worshipping and praising our infinite God (Ps. 90:2; 139:1–12) • relating the mathematical concept of infinity to the infinite characteristics of God (Ps. 147:5; 139:7–10; 1 John 3:20; Deut. 33:27; Isa. 40:28; 1 Tim. 1:17; Matt. 19:26; Rev. 19:6; Prov. 15:3)
165–66	12.3 Tangents and Derivatives	612–17		
167	12.4 Basic Derivative Theorems	618–23		
168–69	12.5 Product, Quotient, and Chain Rules	624–28		
170	DA: Marginal Analysis in Economics	629–30	Quiz 12B (12.3–12.5)	<ul style="list-style-type: none"> • applying biblical principles in business (Lev. 25:14; Ps. 112:1–3; Prov. 11:1; Eccl. 5:19; Isa. 10:1–2; Matt. 25:14–23; 1 Tim. 6:10)
171	12.6 Area Under a Curve and Integration	631–37		
172–73	12.7 The Fundamental Theorem of Calculus	638–43		<ul style="list-style-type: none"> • demonstrating the unity and beauty in God’s created order
174	HC: The Analyst	644	Quiz 12C (12.6–12.7)	<ul style="list-style-type: none"> • reflecting the glory of God and His attributes
175	Chapter 12 Review	645–46		
176	Chapter 12 Test			
177–79	Review for Fourth Quarter Exam (Chapters 7–9) or Second Semester Exam (Chapters 7–12)			
180	Fourth Quarter Exam or Second Semester Exam			