

CONTENTS

1	Trigonometric Functions	
	1.1 Angles.....	1
	1.2 Angle Relationships and Similar Triangles.....	4
	Chapter 1 Quiz	6
	1.3 Trigonometric Functions	6
	1.4 Using the Definitions of Trigonometric Functions	7
	Chapter 1 Review Exercises.....	9
	Chapter 1 Test	10
	Chapter 1 Quantitative Reasoning.....	10
2	Acute Angles and Right Triangles	
	2.1 Trigonometric Functions of Acute Angles.....	11
	2.2 Trigonometric Functions of Non-Acute Angles.....	13
	2.3 Finding Trigonometric Function Values Using a Calculator	14
	Chapter 2 Quiz	16
	2.4 Solving Right Triangles	16
	2.5 Further Applications of Right Triangles	17
	Chapter 2 Review Exercises.....	18
	Chapter 2 Test	19
	Chapter 2 Quantitative Reasoning.....	20
3	Radian Measure and Circular Functions	
	3.1 Radian Measure.....	21
	3.2 Applications of Radian Measure	22
	3.3 The Unit Circle and Circular Functions	24
	Chapter 3 Quiz	26
	3.4 Linear and Angular Speed.....	26
	Chapter 3 Review Exercises.....	27
	Chapter 3 Test	28
	Chapter 3 Quantitative Reasoning.....	29
4	Graphs of the Circular Functions	
	4.1 Graphs of the Sine and Cosine Functions	30
	4.2 Translations of the Graphs of the Sine and Cosine Functions	35
	Chapter 4 Quiz	38
	4.3 Graphs of the Tangent and Cotangent Functions	39
	4.4: Graphs of the Secant and Cosecant Functions	42
	Summary Exercises on Graphing Circular Functions	44
	4.5 Harmonic Motion	45
	Chapter 4 Review Exercises.....	46
	Chapter 4 Test	49
	Chapter 4 Quantitative Reasoning.....	51

5	Trigonometric Identities and Equations	
	5.1 Fundamental Identities	52
	5.2 Verifying Trigonometric Identities	54
	5.3 Sum and Difference Identities for Cosine	60
	5.4 Sum and Difference Identities for Sine and Tangent	62
	Chapter 5 Quiz (Sections 5.1–5.4)	66
	5.5 Double-Angle Identities	66
	5.6 Half-Angle Identities	71
	Summary Exercises on Verifying Trigonometric Identities	73
	Chapter 5 Review Exercises	79
	Chapter 5 Test	83
	Chapter 5 Quantitative Reasoning	84
6	Inverse Circular Functions and Trigonometric Equations	
	6.1 Inverse Circular Functions	86
	6.2 Trigonometric Equations I	89
	6.3 Trigonometric Equations II	91
	Chapter 6 Quiz (Sections 6.1–6.3)	93
	6.4 Equations Involving Inverse Trigonometric Functions	93
	Chapter 6 Review Exercises	96
	Chapter 6 Test	98
	Chapter 6 Quantitative Reasoning	98
7	Applications of Trigonometry and Vectors	
	7.1 Oblique Triangles and the Law of Sines	99
	7.2 The Ambiguous Case of the Law of Sines	100
	7.3 The Law of Cosines	101
	Chapter 7 Quiz (Sections 7.1–7.3)	103
	7.4 Vectors, Operations, and the Dot Product	103
	7.5 Applications of Vectors	107
	Summary Exercises on Applications of Trigonometry and Vectors	108
	Chapter 7 Review Exercises	108
	Chapter 7 Test	109
	Chapter 7 Quantitative Reasoning	110
8	Complex Numbers, Polar Equations, and Parametric Equations	
	8.1 Complex Numbers	111
	8.2 Trigonometric (Polar) Form of Complex Numbers	113
	8.3 The Product and Quotient Theorems	116
	8.4 DeMoivre’s Theorem; Powers and Roots of Complex Numbers	117
	Chapter 8 Quiz (Sections 8.1–8.4)	121
	Section 8.5 Polar Equations and Graphs	121
	Section 8.6 Parametric Equations, Graphs, and Applications	130
	Chapter 8 Review Exercises	135
	Chapter 8 Test	138
	Chapter 8 Quantitative Reasoning	139

Appendices

Appendix A Equations and Inequalities.....	140
Appendix B Graphs of Equations.....	142
Appendix C Functions.....	145
Appendix D Graphing Techniques.....	146