

# Table of Contents

<b>Introduction .....</b>	<b>i-v</b>
What is <i>Engaging Mathematics, Volume I: Precalculus?</i> .....	iv
What is found in an Engaging Mathematics TEKS-based activity? .....	v
<b>Functions .....</b>	<b>1-102</b>
Solving Problems with Composition of Functions, Activity 1 P(2)(A) .....	1
Solving Problems with Composition of Functions, Activity 2 P(2)(A) .....	3
Solving Problems with Composition of Functions, Activity 3 P(2)(A) .....	5
Commutative Property and Composition of Functions P(2)(B) .....	9
Composition of Functions, Activity 1 P(2)(C) .....	11
Composition of Functions, Activity 2 P(2)(C) .....	13
Even and Odd Functions, Activity 1 P(2)(D) .....	17
Even and Odd Functions, Activity 2 P(2)(D) .....	19
Inverse of a Function, Activity 1 P(2)(E) .....	21
Inverse of a Function, Activity 2 P(2)(E) .....	25
Graphing Functions, Activity 1 P(2)(F) .....	27
Graphing Functions, Activity 2 P(2)(F) .....	29
Graphing Functions, Activity 3 P(2)(F) .....	31
Graphing Functions, Activity 4 P(2)(F) .....	33
Graphing Functions, Activity 5 P(2)(F) .....	35
Functions and Their Transformations, Activity 1 P(2)(G) .....	37
Functions and Their Transformations, Activity 2 P(2)(G) .....	39
Functions and Their Transformations, Activity 3 P(2)(G) .....	43
Functions and Their Transformations, Activity 4 P(2)(G) .....	45
Functions and Their Transformations, Activity 5 P(2)(G) .....	49
Transformations of Periodic Functions, Activity 1 P(2)(G) .....	53
Transformations of Periodic Functions, Activity 2 P(2)(G) .....	55
Transformations of Periodic Functions, Activity 3 P(2)(G) .....	57
Arcsine and Arccosine, Activity 1 P(2)(H) .....	59
Arcsine and Arccosine, Activity 2 P(2)(H) .....	61
Key Features of Functions, Activity 1 P(2)(I) .....	63
Key Features of Functions, Activity 2 P(2)(I) .....	65
Key Features of Functions, Activity 3 P(2)(I) .....	67
Key Features of Functions, Activity 4 P(2)(I) .....	71
End Behaviors of Functions, Activity 1 P(2)(J) .....	73
End Behaviors of Functions, Activity 2 P(2)(J) .....	75
Asymptotes P(2)(K) .....	77
Discontinuities P(2)(L) .....	79
Behaviors around Discontinuities, Activity 1 P(2)(M) .....	83
Behaviors around Discontinuities, Activity 2 P(2)(M) .....	85
Analyzing Contextual Situations, Activity 1 P(2)(N) .....	87
Analyzing Contextual Situations, Activity 2 P(2)(N) .....	91
Sinusoidal Functions, Activity 1 P(2)(O) .....	93
Sinusoidal Functions, Activity 2 P(2)(O) .....	95
Trigonometric Functions at Special Angles, Activity 1 P(2)(P) .....	97
Trigonometric Functions at Special Angles, Activity 2 P(2)(P) .....	101
<b>Relations and Geometric Reasoning .....</b>	<b>103-140</b>
Graphing Parametric Equations, Activity 1 P(3)(A) .....	103
Graphing Parametric Equations, Activity 2 P(3)(A) .....	105

Parametric Equations and Rectangular Relations, Activity 1 P(3)(B).....	107
Parametric Equations and Rectangular Relations, Activity 2 P(3)(B).....	109
Parametric Equations in Context P(3)(C) .....	113
Polar Coordinates, Activity 1 P(3)(D) .....	115
Polar Coordinates, Activity 2 P(3)(D) .....	117
Graphing Polar Equations, Activity 1 P(3)(E) .....	121
Graphing Polar Equations, Activity 2 P(3)(E) .....	123
Intersection of Double Napped Cones and Planes P(3)(F).....	125
Definitions of Conics, Activity 1 P(3)(G).....	127
Definitions of Conics, Activity 2 P(3)(G).....	129
Ellipses, Activity 1 P(3)(H) .....	131
Ellipses, Activity 2 P(3)(H) .....	133
Hyperbolas, Activity 1 P(3)(I) .....	135
Hyperbolas, Activity 2 P(3)(I) .....	137
<b>Number and Measure .....</b>	<b>141–206</b>
Periodic Functions, Activity 1 P(4)(A) .....	141
Periodic Functions, Activity 2 P(4)(A) .....	143
Periodic Functions, Activity 3 P(4)(A), P(4)(C) .....	145
Degree Measures and Radian Measures, Activity 1 P(4)(B), P(4)(D) .....	147
Degree Measures and Radian Measures, Activity 2 P(4)(B) .....	149
Degree Measures and Radian Measures, Activity 3 P(4)(B) .....	151
Reference Angles, Activity 1 P(4)(C) .....	155
Reference Angles, Activity 2 P(4)(C) .....	157
Reference Angles, Activity 3 P(4)(C) .....	159
Linear and Angular Velocity, Activity 1 P(4)(D) .....	163
Linear and Angular Velocity, Activity 2 P(4)(D) .....	165
Trigonometric Ratios, Activity 1 P(4)(E).....	169
Trigonometric Ratios, Activity 2 P(4)(E).....	171
Trigonometric Ratios, Activity 3 P(4)(E).....	175
Trigonometry Applications, Activity 1 P(4)(F) .....	177
Trigonometry Applications, Activity 2 P(4)(F) .....	181
Law of Sines, Activity 1 P(4)(G) .....	185
Law of Sines, Activity 2 P(4)(G) .....	189
Law of Cosines, Activity 1 P(4)(H) .....	191
Law of Cosines, Activity 2 P(4)(H) .....	193
Modeling with Vectors P(4)(I) .....	195
Vector Operations, Activity 1 P(4)(J).....	197
Vector Operations, Activity 2 P(4)(J), P(4)(K).....	199
Vector Applications, Activity 1 P(4)(K).....	203
Vector Applications, Activity 2 P(4)(K).....	205
<b>Algebraic Reasoning .....</b>	<b>207–280</b>
Sequences and Series P(5)(A) .....	207
Representing Sequences with Recursive Formulas, Activity 1 P(5)(B) .....	211
Representing Sequences with Recursive Formulas, Activity 2 P(5)(B) .....	213
Arithmetic Sequences, Activity 1 P(5)(C) .....	215
Arithmetic Sequences, Activity 2 P(5)(C) .....	219
Arithmetic Sequences, Activity 3 P(5)(C) .....	221
Series, Activity 1 P(5)(D) .....	223
Series, Activity 2 P(5)(D) .....	225
Geometric Series, Activity 1 P(5)(E) .....	227
Geometric Series, Activity 2 P(5)(E) .....	231
Binomial Theorem P(5)(F) .....	233
Properties of Logarithms, Activity 1 P(5)(G) .....	235

Properties of Logarithms, Activity 2 P(5)(G) .....	239
Properties of Logarithms, Activity 3 P(5)(G) .....	241
Logarithmic Equations, Activity 1 P(5)(H) .....	243
Logarithmic Equations, Activity 2 P(5)(H) .....	245
Exponential Equations, Activity 1 P(5)(I) .....	247
Exponential Equations, Activity 2 P(5)(I) .....	249
Polynomial Equations, Activity 1 P(5)(J) .....	253
Polynomial Equations, Activity 2 P(5)(J) .....	255
Polynomial Inequalities, Activity 1 P(5)(K) .....	257
Polynomial Inequalities, Activity 2 P(5)(K) .....	261
Rational Inequalities, Activity 1 P(5)(L) .....	263
Rational Inequalities, Activity 2 P(5)(L) .....	265
Trigonometric Expressions, Activity 1 P(5)(M) .....	267
Trigonometric Expressions, Activity 2 P(5)(M) .....	271
Trigonometric Equations, Activity 1 P(5)(N) .....	275
Trigonometric Equations, Activity 2 P(5)(N) .....	277