# Unit 3: Trigonometric Functions

MHF4U

## Lesson Outline

### Big Picture

Students will:

- identify and use key features of rational functions;
- solve problems using a variety of tools and strategies related to rational functions;
- determine and interpret average and instantaneous rates of change for rational functions.

| Day | Lesson Title | Math Learning Goals | Expectations |
|---|---|---|---|
| 1 | *(lesson not included)* | • Explore and define radian measure.<br>• Develop and apply the relationship between radian and degrees measure.<br>• Use technology to determine the primary trigonometric ratios, including reciprocals of angles expressed in radians. | B1.1, 1.3 |
| 2–3 | *(lessons not included)* | • Determine the exact values of trigonometric and reciprocal trigonometric ratios for special angles and their multiples using radian measure.<br>• Recognize equivalent trigonometric expressions and verify equivalence with technology. | B1.4, 3.1 |
| 4–5 | *(lessons not included)* | • Graph $f(x) = \sin x$ and $f(x) = \cos x$, using radian measures.<br>• Make connections between the graphs of trigonometric functions generated with degrees and radians.<br>• Graph the reciprocals, using radian measure and properties of rational functions. | B1.2, 1.3, 2.3, C2.1, 2.2 |
| 6 | *(lesson not included)* | • Make connections between the tangent ratio and the tangent function using technology.<br>• Graph the reciprocal trigonometric functions for angles in radians with technology, and determine and describe the key properties.<br>• Understand notation used to represent the reciprocal functions. | B2.2, 2.3, C1.4, 2.1 |
| 7–8 | *(lessons not included)* | • Investigate symmetry of the trigonometric functions and make connections to average and instantaneous rates of change at a point, e.g., examine difference tables, odd, even functions.<br>• Solve problems involving average and instantaneous rates of change at a point for trigonometric functions using numerical and graphical methods. | D1.1–1.9 |
| 9 | Jazz Day | | |
| 10 | Summative Assessment | | |