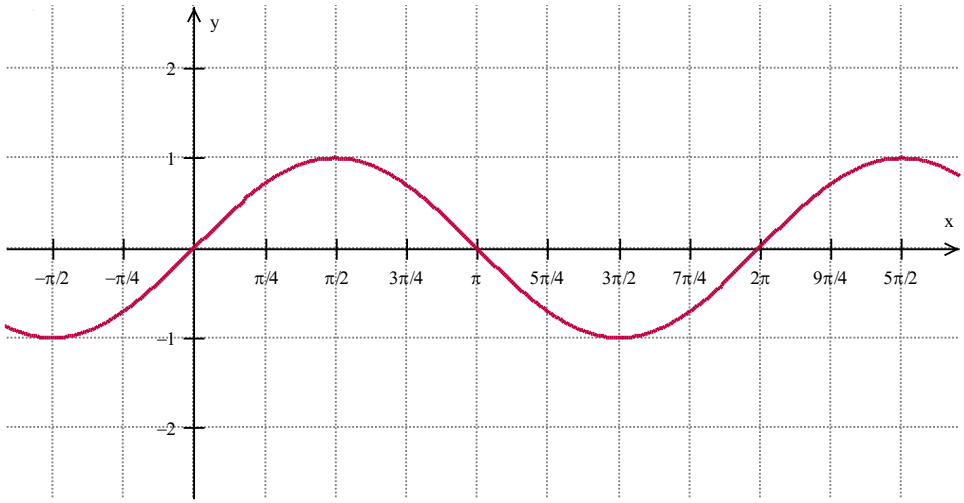
6.5 Exploring Graphs of the Reciprocal Trigonometric Functions

A Cosecant Function

The cosecant function is the reciprocal of the sine function:

$$\csc(x) = \frac{1}{\sin(x)}$$

Ex 1. In the following figure is represented graphically the sine function. Graph the cosecant function $\csc(x) = \frac{1}{\sin(x)}$ on the same grid.



Ex 2. List the characteristics of the cosecant function.

a) Domain

b) Range

c) Symmetry

d) Even/Odd/Neither

e) Vertical Asymptote(s)

f) Horizontal Asymptote(s)

g) Zero(s)

i) Minimum/maximum point(s)

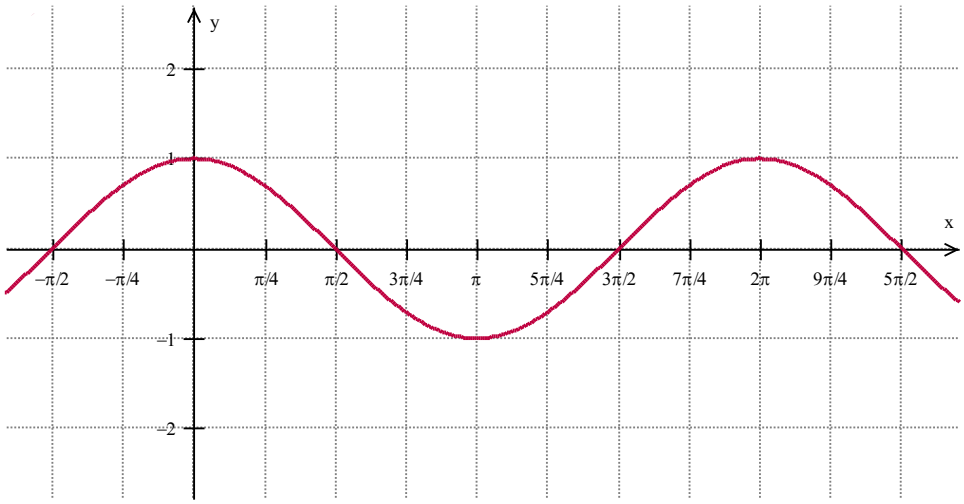
j) Period

B Secant Function

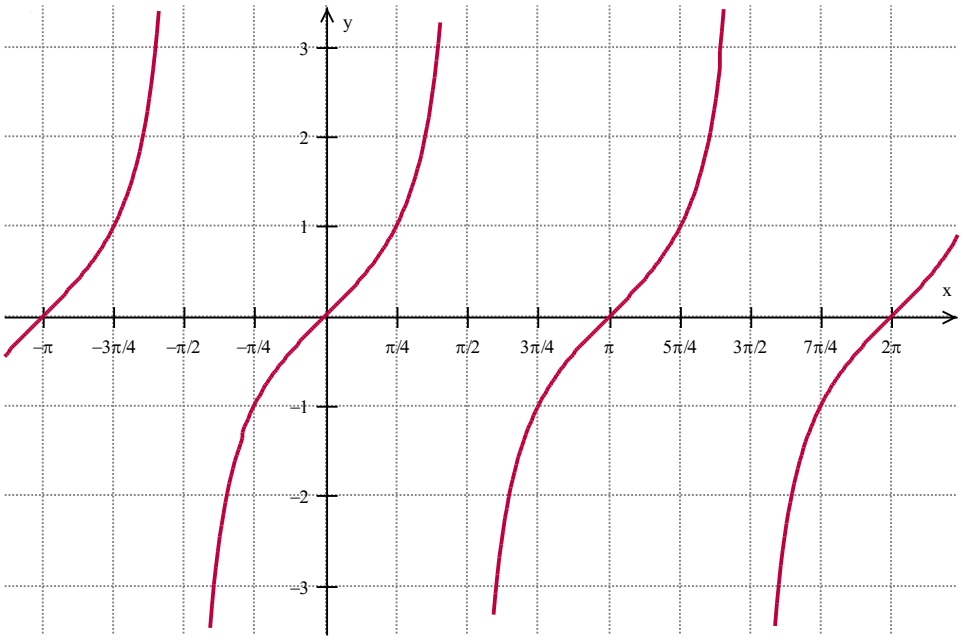
The secant function is the reciprocal of the cosine function:

$$\sec(x) = \frac{1}{\cos(x)}$$

Ex 3. In the following figure is represented graphically the cosine function. Graph the secant function $\sec(x) = \frac{1}{\cos(x)}$ on the same grid.



Ex 4. List the characteristics of the secant function. a) Domain b) Range c) Symmetry d) Even/Odd/Neither	e) Vertical Asymptote(s) f) Horizontal Asymptote(s) g) Zero(s) i) Minimum/maximum point(s) j) Period
C Cotangent Function The cotangent function is the reciprocal of the tangent function: $\cot(x) = \frac{1}{\tan(x)} = \frac{\cos(x)}{\sin(x)}$	Ex 5. In the following figure is represented graphically the tangent function. Graph the cotangent function $\cot(x) = \frac{1}{\tan(x)} = \frac{\cos(x)}{\sin(x)}$ on the same grid.



Ex 6. List the characteristics of the cotangent function. a) Domain b) Range c) Symmetry d) Even/Odd/Neither	e) Vertical Asymptote(s) f) Horizontal Asymptote(s) g) Zero(s) i) Minimum/maximum point(s) j) Period
Ex 7. Write $\sec(x)$ as a transformation of the function $\csc(x)$.	Ex 8. Write $\cot(x)$ as a transformation of the function $\tan(x)$.

Reading: Nelson Textbook, Pages 350-352
Homework: Nelson Textbook, Page 353: #4, 5, 6, 7