Section 5.2 - Trigonometric Functions of Real Numbers

**Examples:** Find each value.

(a) (b) (c)  
(d) (e) (f)  
(g) (h)

**Domains of the Trigonometric Functions**

<table>
<thead>
<tr>
<th>Function</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>sin, cos</td>
<td></td>
</tr>
<tr>
<td>tan, sec</td>
<td></td>
</tr>
<tr>
<td>csc, cot</td>
<td></td>
</tr>
</tbody>
</table>

**Signs of the Trigonometric Functions**

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Positive Functions</th>
<th>Negative Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td></td>
<td></td>
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<tr>
<td>IV</td>
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</tbody>
</table>
Examples: From the information given, find the quadrant in which the terminal point determined by $t$ lies.

(a)

(b)

Using a Calculator to Evaluate Trigonometric Functions

- We can compute the values of the trigonometric functions exactly whenever $t$ is a multiple of $\pi/6$, $\pi/4$, $\pi/3$, and $\pi/2$.
- For other values of $t$, we must use a calculator to find the values of the trigonometric functions. The calculator must be put in radian mode to evaluate trigonometric functions!

Examples: Find the approximate value of the given trigonometric function by using a calculator.

(a) (b)

(c) (d)

Even-Odd Properties

- Recall the definition of an odd function:
- Recall the definition of an even function:
- Sine, cosecant, tangent, and cotangent are odd functions.
- Cosine and secant are even functions.

\[
\begin{align*}
\sin(-t) &= -\sin t \\
\cos(-t) &= \cos t \\
\tan(-t) &= -\tan t \\
\csc(-t) &= -\csc t \\
\sec(-t) &= \sec t \\
\cot(-t) &= -\cot t
\end{align*}
\]

Examples:

(a)
More Fundamental Identities

\[
\sin^2 t + \cos^2 t = 1 \\
1 + \tan^2 t = \sec^2 t \\
1 + \cot^2 t = \csc^2 t
\]

Example:

Example:

Example:
Section 5.3 - Trigonometric Graphs

• Graph of the Sine Function

  Period: ______________
  Amplitude: ______________

• Graph of the Cosine Function

  Period: ______________
  Amplitude: ______________