

Notes: **Converting Degree-Minute-Seconds to Decimal Degree**

$$\text{Decimal Degree} = \text{degrees} + \frac{\text{minutes}}{60} + \frac{\text{seconds}}{60^2}$$

**Converting Decimal Degree to Degree-Minutes-Seconds**

**Example:** Convert  $125.38^\circ$  to D-M-S

$$\begin{aligned} (125 + .38(60)) &= (125 + 22.8) \\ &= (125 + 22 + .8(60)) \\ &= (125 + 22 + 48) \\ &= 125^\circ 22' 48'' \end{aligned}$$

Today's Agenda

1. Review assignment due
2. Today's objectives: You will be able to
  - A. Evaluate trigonometric functions using the unit circle
  - B. Use the domain and period to evaluate sine and cosine functions
  - C. Use a calculator to evaluate trigonometric functions
3. Grade exponential quiz assignment due
4. Complete the unit circle with degree and radian measure, sine, cosine and tangent
5. Today's assignment: WS The Unit Circle & 299/3, 7, 10, 15, 18, 21, 27, 33, 34, 41, 45, 45, 55, 57

Notes

<b>Definition of Trigonometric Functions</b>						
Let $t$ be a real number and $(x, y)$ the point on the circle corresponding to $t$ .						
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; padding: 5px;"><math>\sin t = y</math></td> <td style="width: 33%; padding: 5px;"><math>\cos t = x</math></td> <td style="width: 33%; padding: 5px;"><math>\tan t = \frac{y}{x}</math></td> </tr> <tr> <td style="padding: 5px;"><math>\csc t = \frac{1}{y}, y \neq 0</math></td> <td style="padding: 5px;"><math>\sec t = \frac{1}{x}, x \neq 0</math></td> <td style="padding: 5px;"><math>\cot t = \frac{x}{y}, y \neq 0</math></td> </tr> </table>	$\sin t = y$	$\cos t = x$	$\tan t = \frac{y}{x}$	$\csc t = \frac{1}{y}, y \neq 0$	$\sec t = \frac{1}{x}, x \neq 0$	$\cot t = \frac{x}{y}, y \neq 0$
$\sin t = y$	$\cos t = x$	$\tan t = \frac{y}{x}$				
$\csc t = \frac{1}{y}, y \neq 0$	$\sec t = \frac{1}{x}, x \neq 0$	$\cot t = \frac{x}{y}, y \neq 0$				

**Definition of Periodic Function**

A function  $f$  is **periodic** if there exists a positive real number  $c$  such that  $f(t + c) = f(t)$  for all  $t$  in the domain of  $f$ . The smallest number  $c$  for which  $f$  is periodic is called the **period** of  $f$ .

---

***Even and Odd Trigonometric Functions***

---

The cosine and secant functions are *even*.

$$\cos(-t) = \cos(t) \qquad \sec(-t) = \sec(t)$$

The sine, cosecant, tangent, and cotangent functions are *odd*.

$$\sin(-t) = -\sin(t) \qquad \csc(-t) = -\csc(t)$$

---

$$\tan(-t) = -\tan(t) \qquad \cot(-t) = -\cot(t)$$

---