

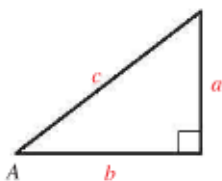
Math 240
Class Packet #5

Topics

- Defining our trig functions in terms of right triangles (connecting to old understanding)
- Cofunction theorem
- Evaluating trig functions at “special” angles

First Things First

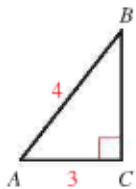
1) Given a right triangle like the one pictured below, complete the table defining our six trig functions in terms of the sides shown.



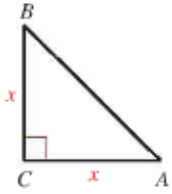
| | |
|------------|--|
| $\sin A =$ | |
| $\cos A =$ | |
| $\tan A =$ | |
| $\csc A =$ | |
| $\sec A =$ | |
| $\cot A =$ | |

2) For each of the triangles given below, find $\sin A$, $\cos A$, $\tan A$, $\sin B$, $\cos B$, $\tan B$

i)



ii)



3) Use the “cofunction theorem” to complete the table given below,

| |
|-------------------------|
| $\sin 40^\circ = \cos$ |
| $\cos 67^\circ = \sin$ |
| $\tan 25^\circ = \cot$ |
| $\sin 195^\circ = \cos$ |

4) Use our previous work with special triangles to complete the table given below.

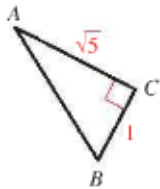
| θ | $\sin \theta$ | $\cos \theta$ | $\tan \theta$ |
|------------|---------------|---------------|---------------|
| 30° | | | |
| 45° | | | |
| 60° | | | |

5) Use your work from (4) to complete the table given below.

| θ | $\sin \theta$ | $\cos \theta$ | $\tan \theta$ |
|-------------|---------------|---------------|---------------|
| 120° | | | |
| 330° | | | |
| -45° | | | |

Do it Yourself

6) For the triangle given below, find $\sin A$, $\cos A$, $\tan A$, $\sin B$, $\cos B$, $\tan B$



7) Use the cofunction theorem to complete the table given below,

| |
|-------------------------|
| $\sin 35^\circ = \cos$ |
| $\cos 100^\circ = \sin$ |
| $\tan 50^\circ = \cot$ |
| $\sin 360^\circ = \cos$ |

8) Evaluate each of the expressions given below. Give your answer in exact form.

i) $(\sin 60^\circ + \cos 60^\circ)^2$

ii) $\tan^2 45^\circ + \tan^2 60^\circ$

iii) $-2 \sin (45^\circ + 45^\circ)$

9) Use your knowledge of right triangle trig to complete the table given below.

| θ | $\sin \theta$ | $\cos \theta$ | $\tan \theta$ |
|-------------|---------------|---------------|---------------|
| 135° | | | |
| 210° | | | |
| -60° | | | |



Math 240
Class Packet #6

Topics

- Converting from decimal degrees to minutes
- Converting from minutes to decimal degrees
- Working with calculators

First Things First

1) For each of the following convert from decimal degrees to degrees and minutes.

i) 34.5°

ii) 74.3°

iii) 52.1°

2) For each of the following convert from degrees and minutes to decimal degrees.

i) $47^\circ 10'$

ii) $88^\circ 15'$

iii) $10^\circ 60'$

3) Find the sum or difference.

i) $(37^\circ 45') + (26^\circ 24')$

ii) $90^\circ - 34^\circ 12'$

iii) $(76^\circ 24') - (22^\circ 34')$

4) Complete the table below by solving for the missing angle θ with terminal side in Q1.

| |
|----------------------------------|
| $\sin \theta = 0.829, \theta =$ |
| $\cos \theta = 0.4226, \theta =$ |
| $\tan \theta = 4.7046, \theta =$ |

5) Find three other angles for which the Sine, Cosine, and Tangent are the same as this in (4). Draw pictures to support your answers.

Do it Yourself

6) For each of the following convert from degrees and minutes to decimal degrees.

i) 80.8°

ii) 45.2°

iii) 60.45°

7) For each of the following convert from degrees and minutes to decimal degrees.

i) $23^\circ 40'$

ii) $18^\circ 25'$

iii) $52^\circ 18'$

8) Find the sum or difference.

i) $(63^\circ 38') + (24^\circ 52')$

ii) $180^\circ - (112^\circ 19')$

iii) $(89^\circ 38') - (28^\circ 58')$

9) Complete the table below by solving for the missing angle θ with terminal side in Q1.

| |
|----------------------------------|
| $\sin \theta = 0.4067, \theta =$ |
| $\cos \theta = 0.1745, \theta =$ |
| $\tan \theta = 1.4826, \theta =$ |

10) Find three other angles for which the Sine, Cosine, and Tangent are the same as this in (9). Draw pictures to support your answers.

