4.3.1 and 4.2.1 Notes

4.3.1: Coterminal angles

4.2.1: Right triangle trig and unit circle

Definitions

- Initial side:
- Terminal side:
- Vertex:
- Measure of an angle:

Definitions

- Positive angles:
- Negative angles:
- Standard position
- Coterminal angles:

Basic Idea

- Coterminal angles differ by an integer multiple of 360º or 2π radians.

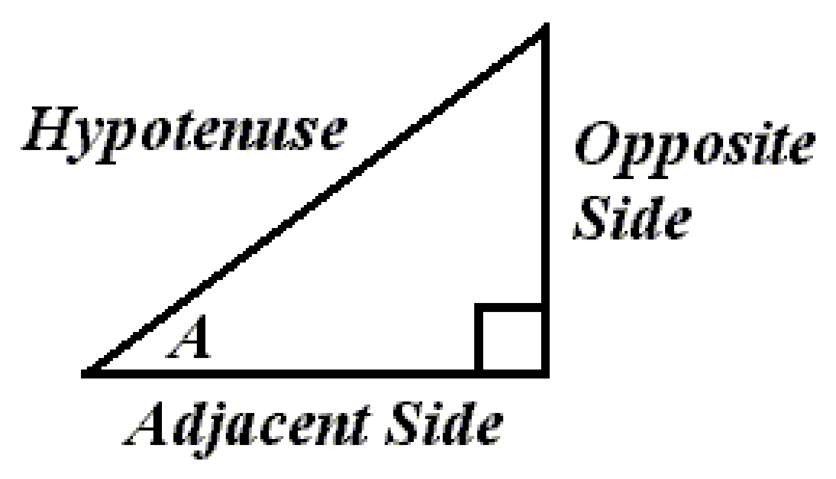
- Ex: Find a positive angle and a negative angle that are coterminal with 30º. (P. 339)

Basic Idea

- Find a positive angle and a negative angle that are coterminal with $\frac{2\pi}{3}$ (P. 339)

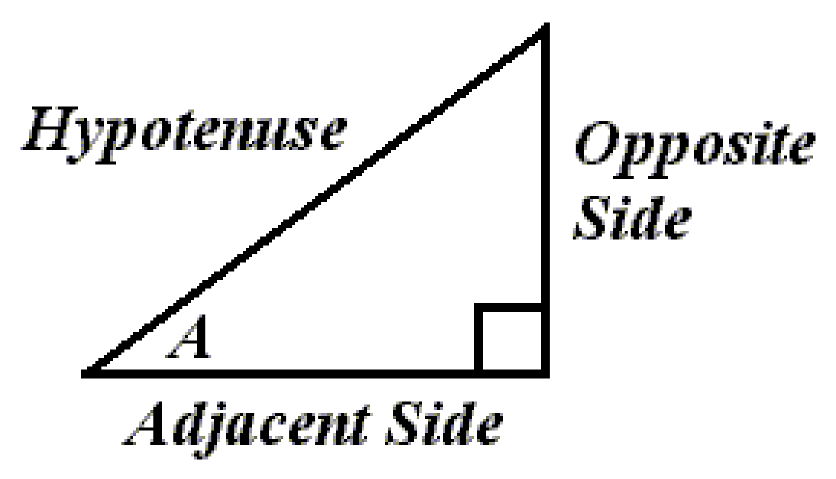
4.2.1: Trig (P. 329)

- In the right triangle at the right, ∠A is the reference angle. Identify the ratios:
  - Sin(A)=
  - Cos(A)=
  - Tan(A)=



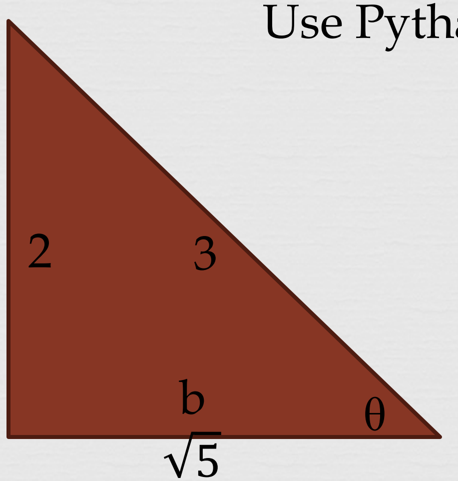
4.2.1: Trig (P. 329)

- In the right triangle at the right, ∠A is the reference angle. Identify the ratios:
  - Csc(A)=
  - Sec(A)=
  - Cot(A)=



- Let θ be an acute angle such that $\sin\theta = \frac{2}{3}$. Find the remaining 5 trig ratios.

$\sin\theta = \frac{2}{3} = \frac{leg\ opp\ \theta}{hypotenuse}$. Use this info to draw a diagram.



Use Pythagorean Theorem to find the missing segment.

$$b = \sqrt{3^2 - 2^2} = \sqrt{5}$$

$$\cos\theta = \frac{\sqrt{5}}{3} \qquad \tan\theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$$

$$\csc\theta = \frac{3}{2} \qquad \sec\theta = \frac{3}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$$

$$\cot\theta = \frac{\sqrt{5}}{2}$$

What are the 4 Common Errors When using a calculator to evaluate a trig expression? (P. 332)

1.

2.

3.

4.

Reference Triangle

- A reference triangle is formed using the terminal side of the angle θ, the *x*-axis, and a perpendicular dropped from a point on the terminal side to the *x*-axis.

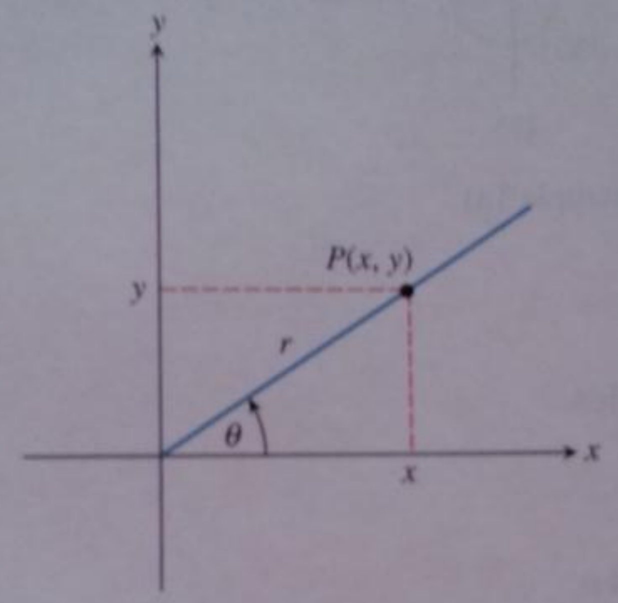


FIGURE 4.24 A point $P(x, y)$ in Quadrant I determines an acute angle θ. The number r denotes the distance from P to the origin.

From last year…

- When we initially looked at graphing reference triangles on a coordinate plane, we concluded that
  - $\cos\theta = \frac{x}{r}$ and $\sin\theta = \frac{y}{r}$ (using the previous slide)
- Using slide 8's information and connecting it to the reference triangle on slide 10, find the other four trig ratio values using a coordinate plane (on P. 320)

- $\csc\theta =$
- $\cot\theta =$
- $\tan\theta =$
- $\sec\theta =$

- The point (-4, -6) is on the terminal side of angle θ. Evaluate cos, csc, and tan for θ.
  - You know $x = -4 \; and \; y = -6$. You need to find r using Pythagorean Theorem. $r = \sqrt{(-4)^2 + (-6)^2} = \sqrt{52} = 2\sqrt{13}$.

Now find the ratios:

$$\csc\theta = \frac{2\sqrt{13}}{-6} = \frac{-\sqrt{13}}{3}$$

$$\cos\theta = \frac{-4}{2\sqrt{13}} = \frac{-2\sqrt{13}}{13}$$

$$\tan\theta = \frac{-6}{-4} = \frac{3}{2}$$

Unit Circle

- Found on P. 346
- You will need to recreate this if you don't have one already.