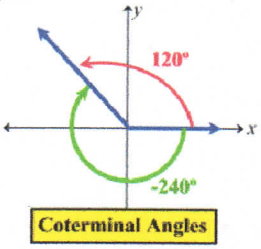
UNIT #6: Trigonometric Transformations

Co-Terminal Angles

Learning Goal:

I will learn how to determine the co-terminal angle of a given angle.

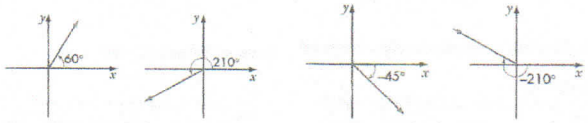


Lesson: Co-Terminal Angles

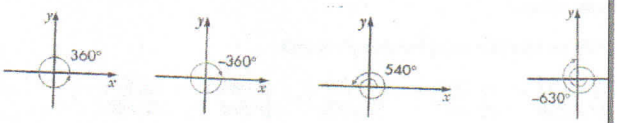
Angle of Rotation:
Angle of rotation from the initial arm to the terminal arm determines the angle measure.

Positive angles - rotate counterclockwise

Negative angles - rotate clockwise



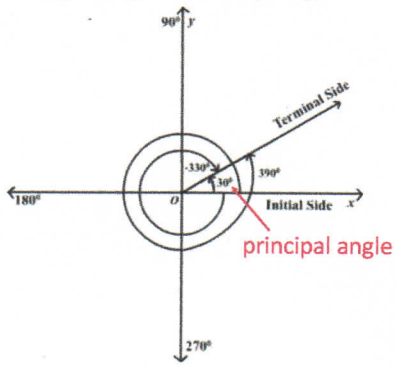
One complete revolution may have an angle of 360° or -360°.
The terminal arm may also rotate more than one rotation.



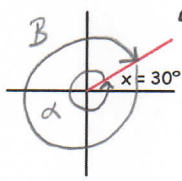
Co-Terminal Angles:
When different angles in standard position have the same terminal arm, the angles are co-terminal.

The **principal angle** is the small positive angle.

To find co-terminal angles, **add or subtract multiples of 360°** to the given angle: ie. $\Theta + k\,(360°)$, where Θ is the given angle and k is any integer



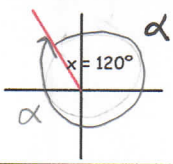
Example 1: State two angles co-terminal with x.



$\alpha = 30° + 360° = \boxed{390°}$

$B = 30° - 360° = \boxed{-330°}$

Example 2:
Find an angle with negative rotation, co-terminal with x.

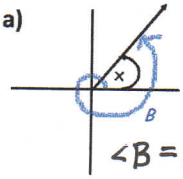


$\alpha = 120° - 360° = \boxed{-240°}$

Co-Terminal Angles (Lesson Notes).notebook

Example 3: $\angle x = 60°$, state measure of B and A

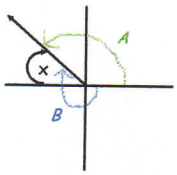
a)



$\angle B = 270° + 60°$

$\angle B = 330°$

b)



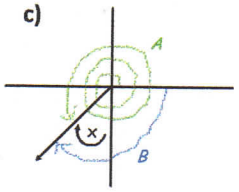
$\angle A = 180° - 60°$

$\angle A = 20°$

$\angle B = -180° - 60°$

$\angle B = -240°$

c)



$\angle A = 360° + 360° + 270° - 60°$

$\angle A = 930°$

$\angle B = -90° - 60°$

$\angle B = -150°$

Example 4: State two angles (one positive and one negative) co-terminal with the given angle.

50°. $50° + 360° = 410°$

$50° - 360° = -310°$

210°. 2 rotations

$210° + 2(360°) = 930°$

$210 - 2(360°) = 510°$

UNIT 6: Trignometric Functions

Co-Terminal Angles

Learning Goal:

I will learn how to determine the co-terminal angle of a given angle.

Success Criteria:

To be successful, I must be able to...

- Recognize that positive angles rotate counterclockwise and negative angles rotate clockwise.
- Find the co-terminal angle by adding or subtracting multiples of 360° to the given angle. $\theta + k(360°)$

Practice Work

Co-Terminal Angles Worksheet