Related Acute Angle
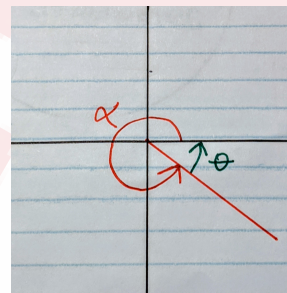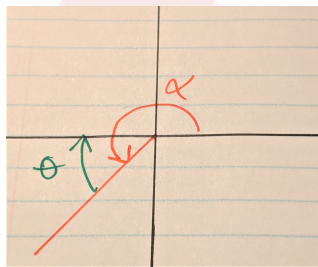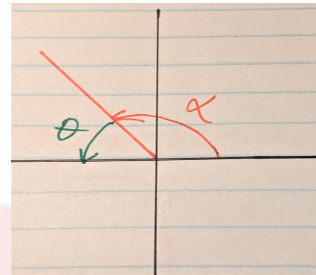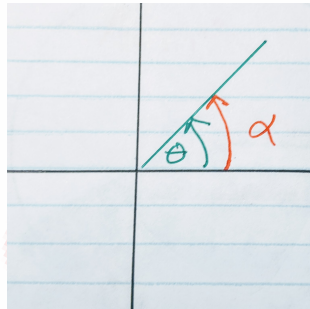
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Related acute angle

The **related acute angle** is an angle less than 90° that is found between the terminal arm and the x-axis when the terminal arm is in quadrant 2, 3 or 4. In the figures below, the green angle θ is the *related acuts angle* to the red angle α.

Example

For the following angles determine the related acute angle,

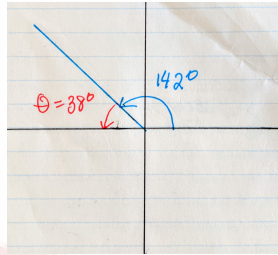a) 142°   b) 225°
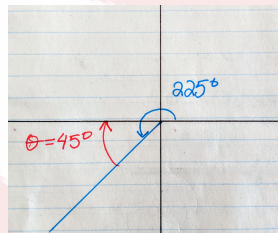
Solution:

a) 142° is in quadrant 2. So the related acute angle is the positive

angle between the negative x-axis and the terminal arm. So,

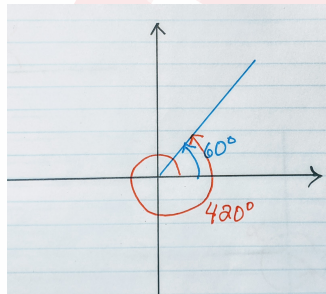$$\begin{aligned} \theta &= \text{ related acute angle} \\ &= 180 - 142 \\ &= 38° \end{aligned}$$

b) $225°$ is in the 3rd quadrant. So the related acute angle is, $225 - 180 = 45°$.

Coterminal angle

A **coterminal angle** is an angle measure that shares a terminal arm with another angle. In the figure below, the blue angle $60°$ is the given angle and the red angle $420°$ is the *coterminal angle* to the blue angle.
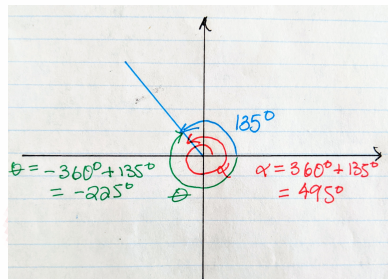
Example

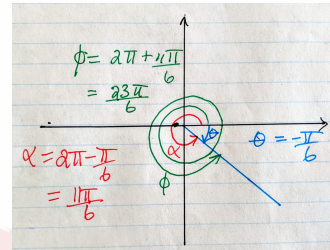For the folliwng angles determine at least 2 more coterminal angles.

a) $135°$ b) $\frac{5\pi}{6}$ radians

Solution:

a)

b)

Exercises

For the following angles determine the related acute angle.

(a) $200°$

(b) $112°$

(c) $300°$

(d) $-100°$

(e) $57°$

(f) $\pi/3$ radians

(g) $4\pi/3$ radians

(h) $3\pi/4$ radians

(i) $5\pi/3$ radians

(j) $7\pi/6$ radians