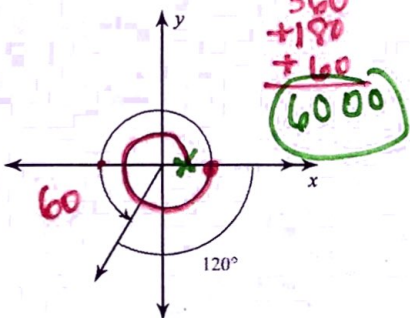


7 Angles in Standard Position

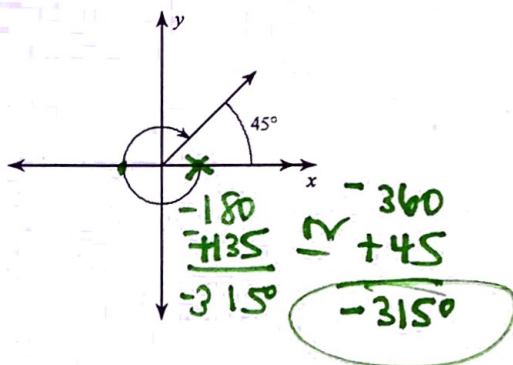
+ CCW
- CW

Find the measure of each angle.

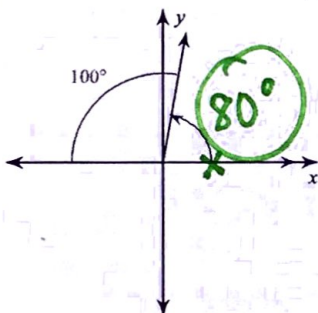
1)



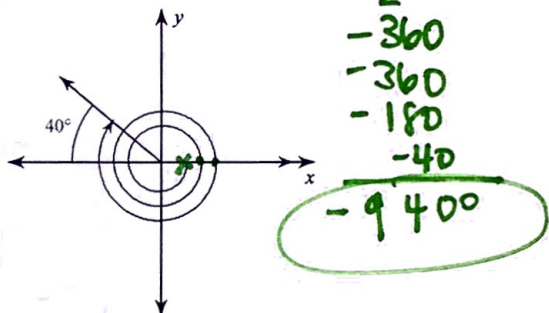
2)



3)

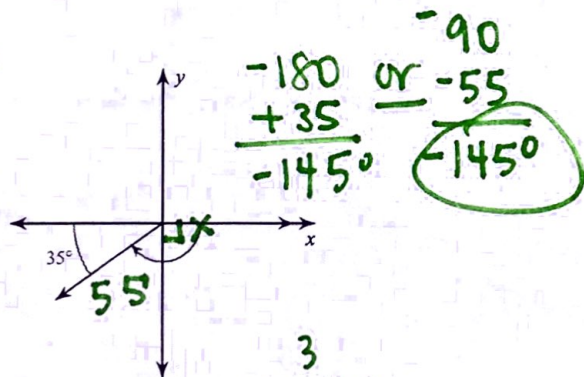


4)

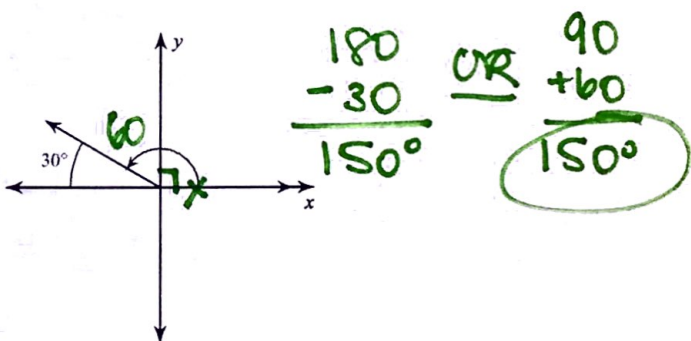


Fin

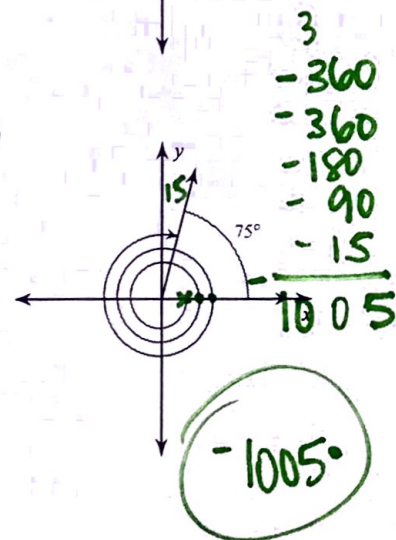
5)



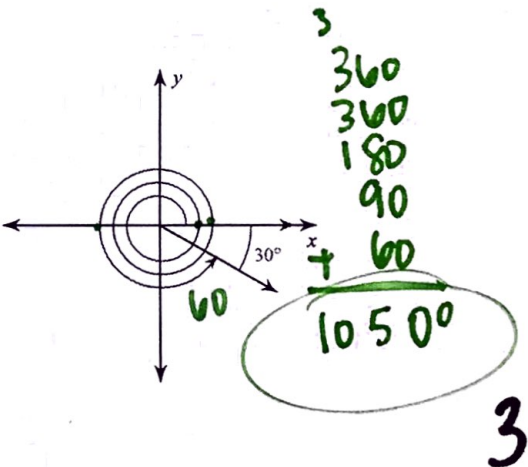
6)



7)



8)



3

Coterminal Angles:

Two angles in standard position are called coterminal angles if they have the same terminal side. These angles have different angles measures, because of revolutions.

If angles are measured in **degrees**, coterminal angles can be found by adding or subtracting 360.

If angles are measured in **radians**, coterminal angles can be found by adding or subtracting 2π .

Example 1:

Find 1 positive coterminal angle and 1 negative coterminal angle for 72° .

$$72 + 360 = 432^\circ \quad / \quad 72 - 360 = -288^\circ$$

Find 1 positive coterminal angle and 1 negative coterminal angle for -134° .

$$-134 + 360 = 226^\circ \quad / \quad -134 - 360 = -494^\circ$$

Example 2:

Find 1 positive coterminal angle and 1 negative coterminal angle for $\frac{3\pi}{4}$.

$$\frac{3\pi}{4} + 2\pi = \frac{11\pi}{4} \quad / \quad \frac{3\pi}{4} - 2\pi = -\frac{5\pi}{4}$$

Find 1 positive coterminal angle and 1 negative coterminal angle for $\frac{5\pi}{3}$.

$$\frac{5\pi}{3} + 2\pi = \frac{11\pi}{3} \quad / \quad \frac{5\pi}{3} - 2\pi = -\frac{\pi}{3}$$

For each of the following, find 1 positive coterminal angle and 1 negative coterminal angle for the given angle.

a) 60°

$$-300, 420^\circ$$

b) 45°

$$405, -315$$

c) -134°

$$226, -494$$

d) -25°

$$335, -385$$

e) $\frac{2\pi}{5}$

$$\frac{12\pi}{5}, -\frac{8\pi}{5}$$

f) $\frac{-3\pi}{4}$

$$\frac{5\pi}{4}, -\frac{11\pi}{4}$$

g) $\frac{\pi}{6}$

$$\frac{13\pi}{6}, -\frac{11\pi}{6}$$

h) 4π

$$2\pi, -2\pi$$

i) 8.2π

$$6.2\pi, -1.8\pi$$

j) 207°

$$567, -153$$

k) $\frac{5\pi}{2}$

$$\frac{\pi}{2}, -\frac{3\pi}{2}$$
$$\frac{9\pi}{2}$$

l) 73°

$$433^\circ, -287^\circ$$