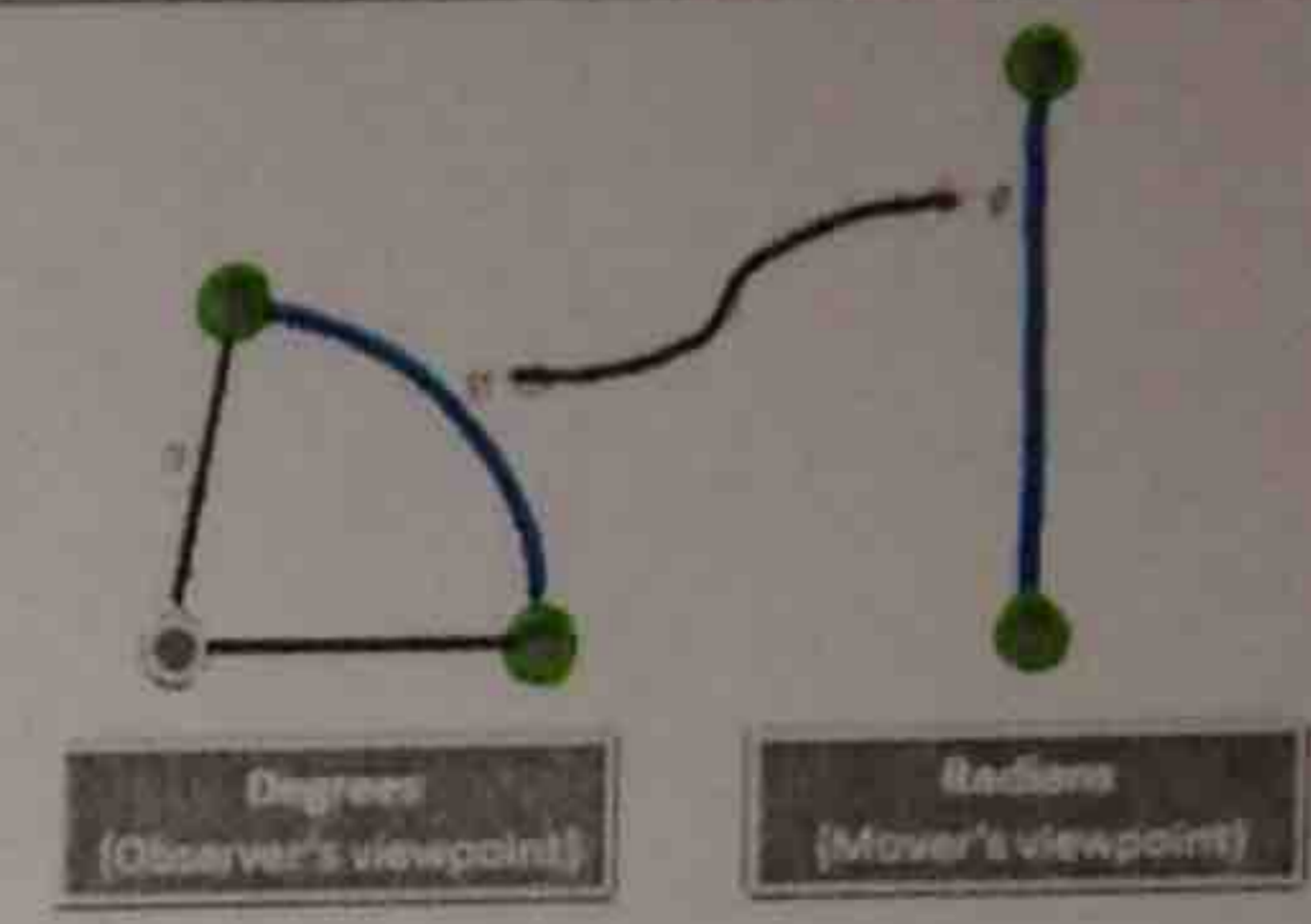


7.3 Radian and Degree Measures

SWBAT convert between radians and degrees.

Degrees	Radians
Measures angles by how far something is tilted	Measures angles by distance traveled (arc length) $\text{Radian} = \frac{\text{distance traveled}}{\text{radius}}$


Converting Between Degrees and Radians

To convert FROM...	TO...	MULTIPLY by...
Degrees	Radians	$\pi/180$
Radians	Degrees	$180/\pi$

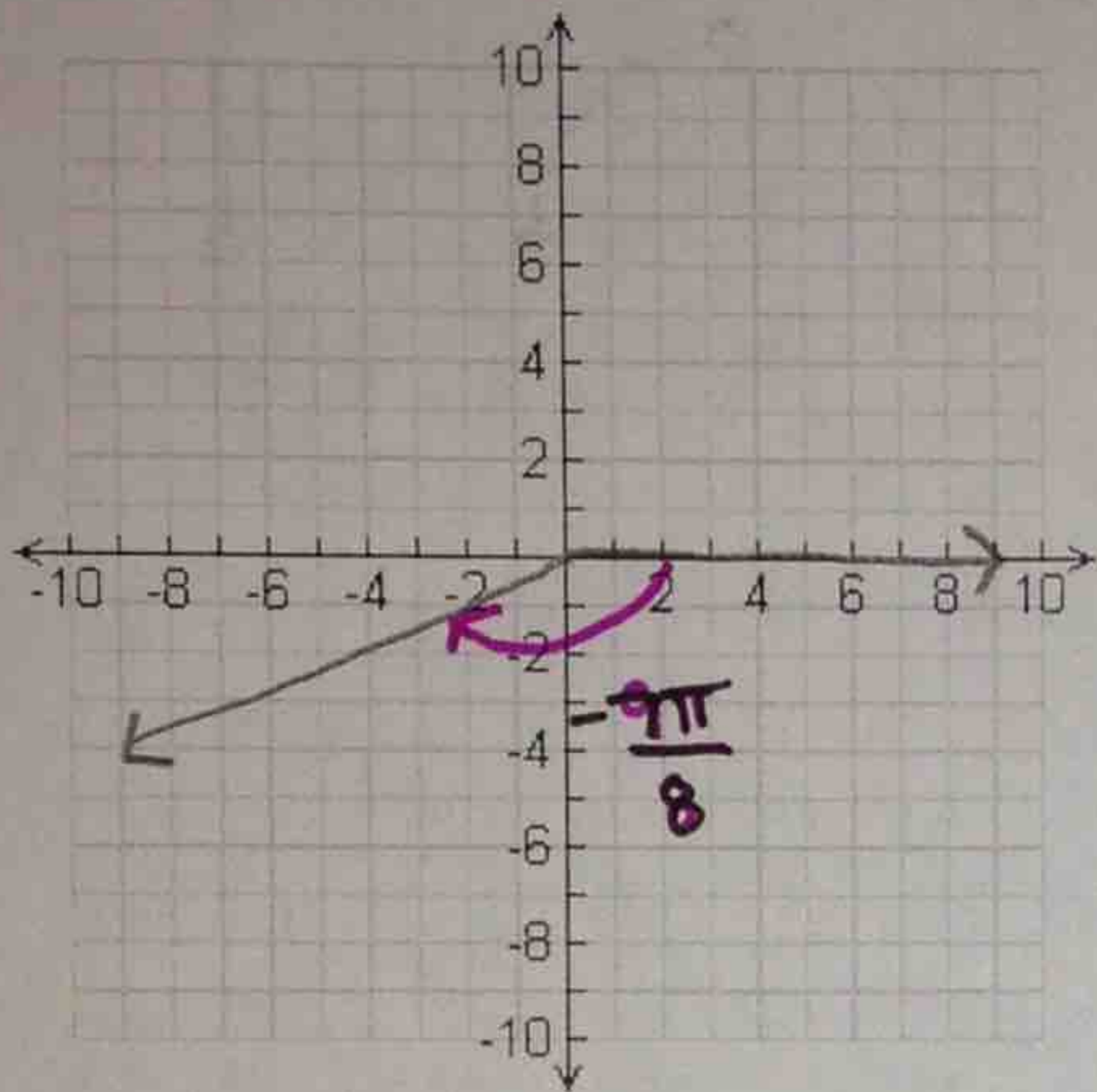
****Remember that the TOP of your multiplier is the unit you're converting TO****

Note: Radians must always be in π form. Degrees must always be in decimal form.

Convert from...	To...	Multiply by	To get...
90°	Radians	$90 \cdot \frac{\pi}{180} = \frac{90\pi}{180}$	$\frac{\pi}{2}$ radians
$\frac{7\pi}{6}$ radians	Degrees	$\frac{7\pi}{6} \cdot \frac{180}{\pi} = \frac{1260}{6}$	210°
200°	Radians	$200 \cdot \frac{\pi}{180} = \frac{200\pi}{180}$	$\frac{10\pi}{9}$ radians
$\frac{5\pi}{4}$ radians	Degrees	$\frac{5\pi}{4} \cdot \frac{180}{\pi} = \frac{900}{4}$	225°
-150°	Radians	$-150 \cdot \frac{\pi}{180} = \frac{-150\pi}{180}$	$\frac{-5\pi}{6}$ radians
5 radians	Degrees	$5 \cdot \frac{180}{\pi} = \frac{900}{\pi}$	286.6°
540°	Radians	$540 \cdot \frac{\pi}{180} = \frac{540\pi}{180}$	3π radians
$-\frac{7\pi}{8}$ radians	Degrees	$-\frac{7\pi}{8} \cdot \frac{180}{\pi} = \frac{-1260}{8}$	-157.5°

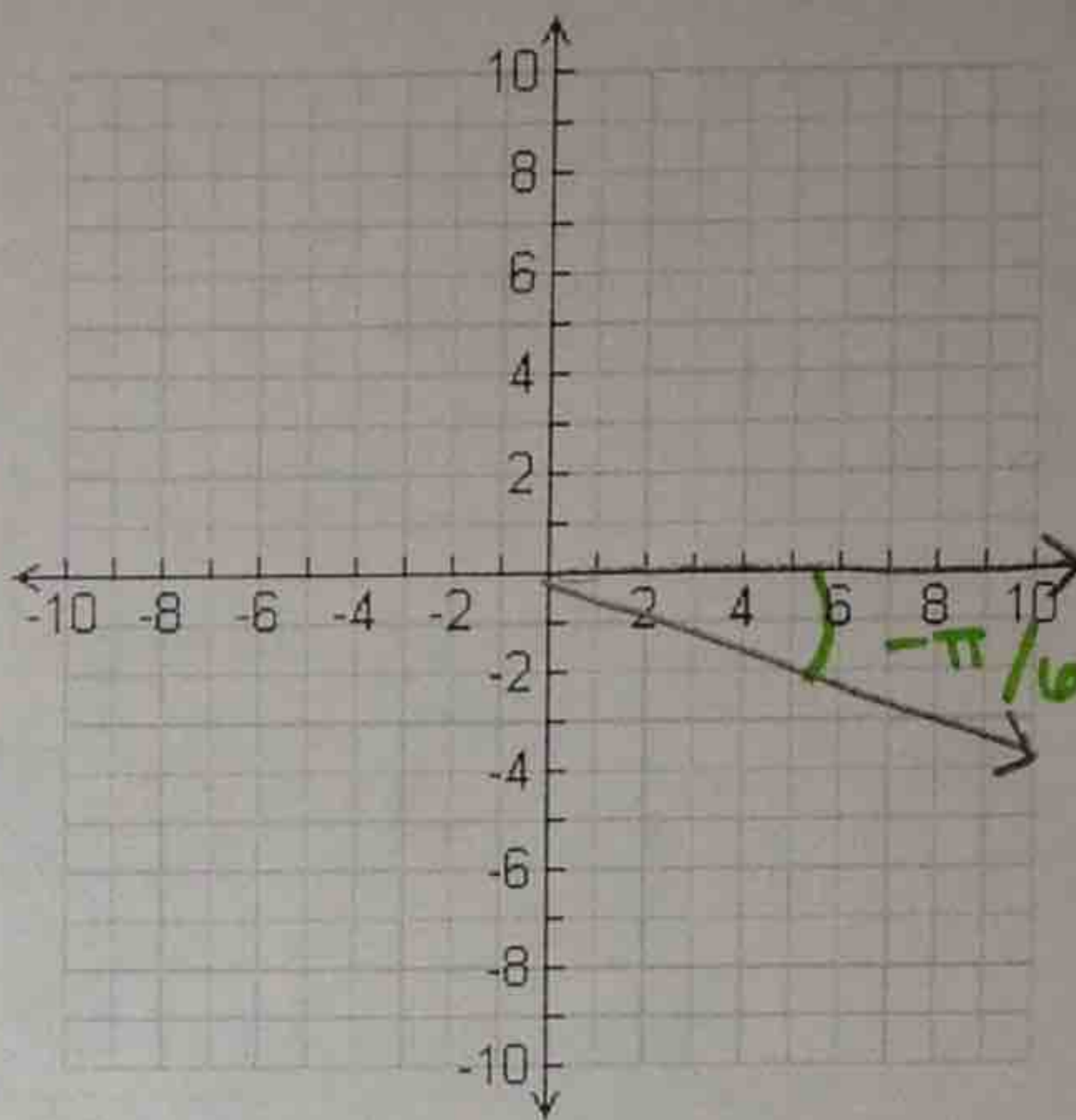
Example 2: Find each coterminal angle between 0 and 2π . *Hint: Instead of adding or subtracting 360° , use the radian equivalent (2π)! Then, graph the radian measure on the coordinate plane! Don't forget your swoosh marks!*

a) $-\frac{7\pi}{8}$ radians $2\pi = \frac{16\pi}{8}$



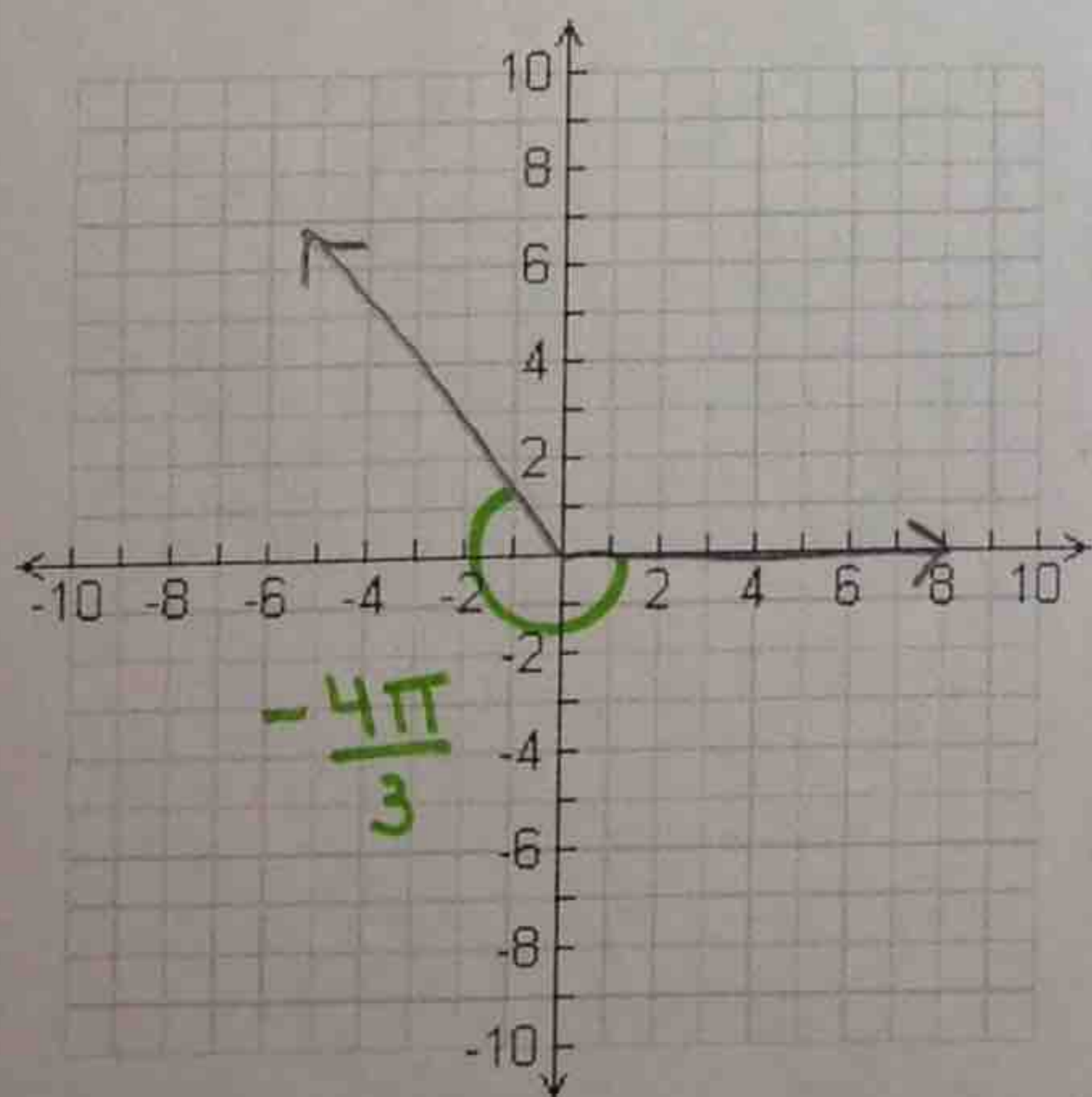
$$-\frac{7\pi}{8} + \frac{16\pi}{8} = \frac{9\pi}{8}$$

b) $-\frac{\pi}{6}$ radians $2\pi = \frac{12\pi}{6}$



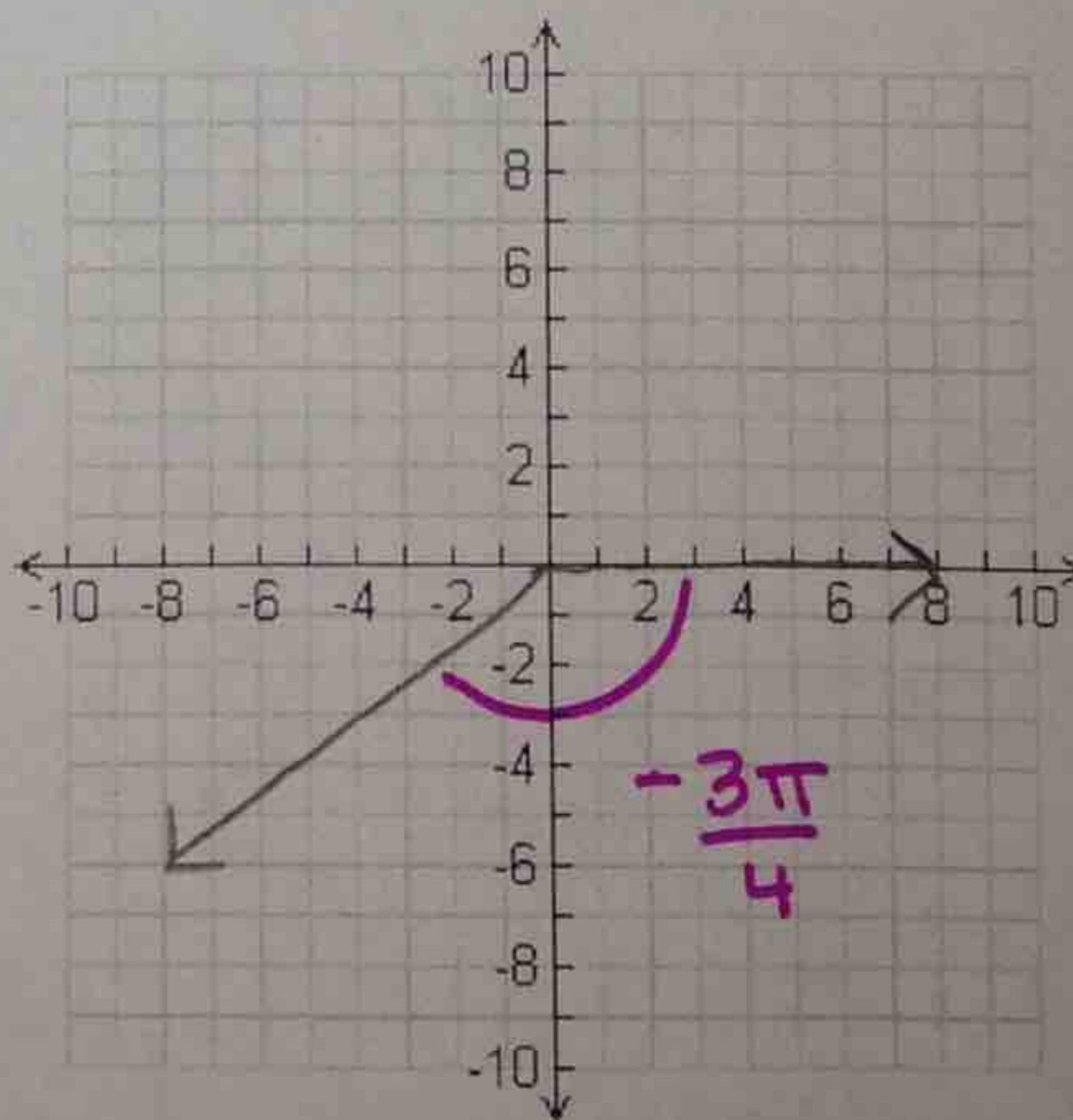
$$-\frac{\pi}{6} + \frac{12\pi}{6} = \frac{11\pi}{6}$$

c) $-\frac{4\pi}{3}$ radians $2\pi = \frac{6\pi}{3}$



$$-\frac{4\pi}{3} + \frac{6\pi}{3} = \frac{2\pi}{3}$$

d) $-\frac{3\pi}{4}$ radians $2\pi = \frac{8\pi}{4}$



$$-\frac{3\pi}{4} + \frac{8\pi}{4} = \frac{5\pi}{4}$$