Topic: Converting between degrees and radians

Question: What is the measure, in radians, of the angle?

220°

Answer choices:

A $\frac{9}{11}\pi$

B $\frac{5}{4}\pi$

C $\frac{11}{9}\pi$

D $\frac{5}{6}\pi$

Solution: C

Since there are π radians in 180°, we will multiply 220° by 1, written in the form $\pi/(180^\circ)$:

$$220^\circ = 220^\circ(1)$$

$$220^\circ = 220^\circ\left(\frac{\pi}{180^\circ}\right)$$

$$220^\circ = \left(\frac{220}{180}\right)\pi$$

$$220^\circ = \left(\frac{11}{9}\right)\pi$$

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Question: What is the measure, in degrees, of the angle?

$$-\frac{13}{8}\pi$$

Answer choices:

A -260°

B -292.5°

C -265.5°

D -290°

Solution: B

Since there are $180°$ in π radians, we will multiply $-(13/8)\pi$ by 1, written in the form $(180°)/\pi$:

$$-\frac{13}{8}\pi = -\frac{13}{8}\pi(1)$$

$$-\frac{13}{8}\pi = -\frac{13}{8}\pi\left(\frac{180°}{\pi}\right)$$

$$-\frac{13}{8}\pi = -\left[\frac{13(180)}{8}\right]°$$

$$-\frac{13}{8}\pi = -\left(\frac{2{,}340}{8}\right)°$$

$$-\frac{13}{8}\pi = -\left(\frac{585}{2}\right)°$$

$$-\frac{13}{8}\pi = -292.5°$$

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Question: Which of the following is the best approximation of the angle?

163°

Answer choices:

A 2.84 radians

B 3.45 radians

C 1.76 radians

D 2.66 radians

Solution: A

Since there are π radians in $180°$, we will multiply $163°$ by 1, written in the form $\pi/(180°)$:

$$163° = 163°(1)$$

$$163° = 163° \left(\frac{\pi}{180°} \right)$$

$$163° = \left(\frac{163}{180} \right) \pi$$

Thus $163°$ is equivalent to $(163/180)\pi$ radians. If we substitute the numerical value of π (3.1415...), we find that $163°$ is approximately 2.84 radians.