Topic: Complementary and supplementary angles

Question: Find the angle θ that's supplementary to 126°.

Answer choices:

A $\theta = 154^\circ$

B $\theta = 36^\circ$

C $\theta = 54^\circ$

D $\theta = 180^\circ$

Solution: C

Since θ is supplementary to an angle of 126° we have

$$\theta + 126^\circ = 180^\circ$$

Solving for θ:

$$\theta = 180^\circ - 126^\circ$$

$$\theta = 54^\circ$$

Topic: Complementary and supplementary angles

Question: Find the complementary angle in radians to $\pi/6$.

Answer choices:

A $\theta = \frac{5}{12}\pi$

B $\theta = \frac{\pi}{2}$

C $\theta = \frac{5}{6}\pi$

D $\theta = \frac{1}{3}\pi$

Solution: D

θ and the angle of $\pi/6$ radians are complementary, so

$$\theta + \frac{\pi}{6} = \frac{\pi}{2}$$

Solving for θ:

$$\theta = \frac{\pi}{2} - \frac{\pi}{6}$$

$$\theta = \left(\frac{1}{2} - \frac{1}{6}\right)\pi$$

Combining the two terms on the right-hand side by using 6 as a common denominator, we find that

$$\theta = \left(\frac{3-1}{6}\right)\pi$$

$$\theta = \frac{2}{6}\pi$$

$$\theta = \frac{1}{3}\pi$$

Topic: Complementary and supplementary angles

Question: Find the angle θ that's $1/3$ as large as the supplement of 87°.

Answer choices:

A $\theta = 1^\circ$

B $\theta = 31^\circ$

C $\theta = 37\frac{2}{3}^\circ$

D $\theta = 13^\circ$

Solution: B

Let α be the angle that's supplementary to an angle of $87°$. Then

$$\alpha + 87° = 180°$$

$$\alpha = 180° - 87°$$

$$\alpha = 93°$$

Now $\theta = (1/3)\alpha$, so

$$\theta = \frac{1}{3}(93°)$$

$$\theta = 31°$$