$f(x) = x^3 + 2 - \sin x$

option(a) $f(-\pi) = -\pi^3 + 2 + 0 < 0$

$f(\pi) = \pi^3 + 2 > 0$

⇒ By intermediate property $\exists\ c \in [-\pi, \pi)$ such that $f(c) = 0$ ✓

Why option (c) is correct

option (b)

$f(0) = (0)^2 + 2 - \sin(0) = 2 > 0$

$f(\pi) = \pi^3 + 2 > 0$

⇒ $\nexists\ c \in [0, \pi]$ such that $f(c) = 0$

The option (b) is false