Exemplar P1 Q4

4. For the function \( f(x) = 2 - 3 \sin \left( x - \frac{\pi}{3} \right) \) in the interval \( 0 \leq x < 2\pi \), determine which two of the following statements are true and justify your answer.

Statement A  The maximum value of \( f(x) \) is \(-1\).

Statement B  The maximum value of \( f(x) \) is \(5\).

Statement C  The maximum value occurs when \( x = \frac{5\pi}{6} \).

Statement D  The maximum value occurs when \( x = \frac{11\pi}{6} \).

Answer

\( B \ & \ D \) true