formula - $\sin x - \sin y = 2\cos\left(\frac{x+y}{2}\right) \cdot \sin\left(\frac{x-y}{2}\right)$

(b) $|\sin 2x - \sin 2y| = |2\cos(x+y) \cdot \sin(x-y)|$

$\leq |2|\,|\cos(x+y)|\,|\sin(x-y)|$

$= |x-y|$

$|\cos x| \leq 1$ $\forall x, y \in R$

$|\sin x| \leq x$

option (b) ✓

(a) $|\sin^2 x - \sin^2 y| = |(\sin x + \sin y)(\sin x - \sin y)|$

$\leq \underbrace{|\sin x + \sin y|}_{\text{bounded}}\,|\sin x - \sin y|$

$\leq K\left|\frac{x-y}{2}\right|$ [from option (b)]

$= c|x-y| < |x-y|$

option (a) ✓

(c) Since $e^x > x$ $\forall x \in R$

$\Rightarrow |e^x - e^y| \geq |x-y|$ option (c) ✓

(d) $e^x \cos x + 1 = 0$

$x = \pi, 3\pi, \ldots (2n-1)\pi$ are roots

option (d) ✗