

$$a = \min (x^2 + 2x + 3)$$

$$\text{let } f(x) = x^2 + 2x + 3$$

$$= (x+1)^2 + 2$$

$$\boxed{\min f(x) = 2} = a$$

$$b = \frac{\sin 9}{29} = \boxed{\frac{1}{2} = b}$$

Consider

$$\sum_{n=0}^{\infty} a^n b^{n-n}$$

$$= \sum_{n=0}^{\infty} 2^n \left(\frac{1}{2}\right)^{n-n}$$

$$\Rightarrow \sum_{n=0}^n 2^{n-n+n} = \sum_{n=0}^n 2^{2n-n}$$

$$= 2^{-n} \sum_{n=0}^n 4^n$$

$$= 2^{-n} \left(\frac{4^{n+1} - 1}{4 - 1} \right)$$

$$= \frac{4^{n+1} - 1}{3 \cdot 2^n}$$

option (c)