

## Solutions

	a	b	c	d	e
1				×	
2			×		
3	×				
4			×		

1. The correct answer is (d). Indeed, for even  $n$  we have  $(0, \exp((-1)^n n)) = (0, \exp(n))$  and  $\exp(n) \rightarrow \infty$  for  $n \rightarrow \infty$ . So our set in (d) is  $(0, \infty)$ , which is not bounded above. The set in (a) is  $\emptyset$ , the set in (b) is  $(0, e^{-1})$  and the set in (c) is  $(0, e)$ .
2. The correct answer is (c). Indeed, for the set  $A$ , we have  $\inf A = -1$ ,  $\min A$  does not exist, and  $\sup A = \max A = 2$ . Thus, (c) is true and (a), (b), (d) are false.
3. The correct answer is (a). Indeed, for any  $H$  we can take  $N = \lceil |H| \rceil + 1$ , then for  $n \geq N$  we have  $n \geq H + 1$ , so  $n - 1 \geq H$ , and so  $n + (-1)^n \geq H$ .
4. The correct answer is (c).