

1 Use  $\Theta$  notation to express the statement

$$4n^6 \leq 17n^6 - 45n^3 + 2n + 8 \leq 30n^6, n \geq 3$$

Let  $A = 4$ ,  $B = 30$  and  $k = 3$  then the statement translates to

$$An^6 \leq 17n^6 - 45n^3 + 2n + 8 \leq Bn^6, n \geq k$$

hence by the definition of  $\Theta$  notation  $17n^6 - 45n^3 + 2n + 8$  is  $\Theta(n^6)$ .