

**H.** Given a positive integer  $n$  and a real number  $k$ , consider the following equation in  $x$ ,

$$(x - 1)(x - 2)(x - 3) \times \cdots \times (x - n) = k.$$

Which of the following statements about this equation is true?

- (a) If  $n = 3$ , then the equation has no real solution  $x$  for some values of  $k$ .
- (b) If  $n$  is even, then the equation has a real solution  $x$  for any given value of  $k$ .
- (c) If  $k \geq 0$  then the equation has (at least) one real solution  $x$ .
- (d) The equation never has a repeated solution  $x$  for any given values of  $k$  and  $n$ .