Turkey Junior National Olympiad 2003

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1   Let $ABCD$ be a cyclic quadrilateral, and E be the intersection of its diagonals. If $m(\widehat{ADB}) = 22.5°$, $|BD| = 6$, and $|AD| \cdot |CE| = |DC| \cdot |AE|$, find the area of the quadrilateral $ABCD$.

2   From the positive integers, $m, m+1, \ldots, m+n$, only the sum of digits of m and the sum of digits of $m + n$ are divisible by 8. Find the maximum value of n.

3   How many subsets of $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$ contain no two consequtive numbers?