Bonus Polar Coordinates Problem

1. Consider the family of polar curves

$$r = \cos(2n\theta)$$

   where n is an integer greater than 0. The graphs of these all form flowers.

   (a) How many petals does the nth flower $r = \cos(2n\theta)$ have?

   (b) What is the area of a single petal? Hint: your answer will depend on n

   (c) What is the area of enclosed by the whole flower?

2. Repeat the previous steps, but with the other flower family

$$r = \cos((2n+1)\theta)$$

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