1. Let $u$ and $v$ be two numbers which are positive or zero, whose sum is 10 and so that $u^2v$ is as large as possible.

   (a) Write down a function $f$ and an interval $[a, b]$ so that the maximum value of $f$ on the interval $[a, b]$ occurs at the number $u$ described above.

   (b) Find $u$ and $v$.

2. Suppose a circle of radius $r$ is inscribed in a hexagon as pictured. Find the area of the hexagon. (This formula for the area of a hexagon will be needed in the next problem.)

3. Answer parts 1–2 of the project in Stewart, pages 288–89. It will be helpful to read the example 2 on page 279-280 before beginning the project.

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