正多邊形的世界

全任重

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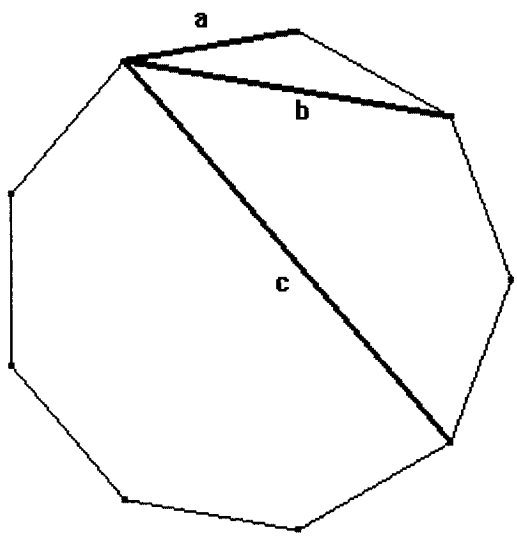
代數關係	面積關係	共點性	萬花筒

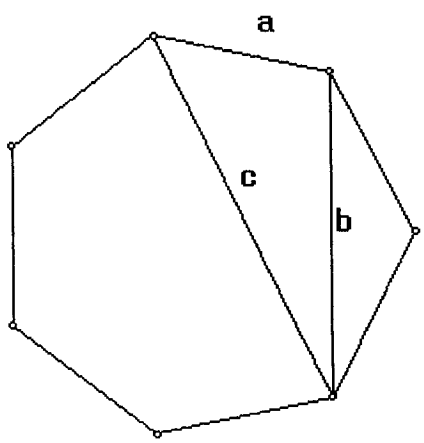
在正九邊形中 ，



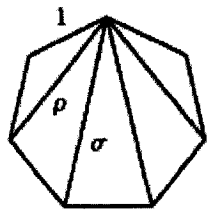
a + b = c

在正七邊形中,

$$\frac{1}{c} + \frac{1}{b} = \frac{1}{a}$$



在正七邊形中,



$\rho^2 = 1 + \sigma$ $\quad \sigma/\rho = \sigma - 1$ $\quad 1/\sigma = \sigma - \rho$

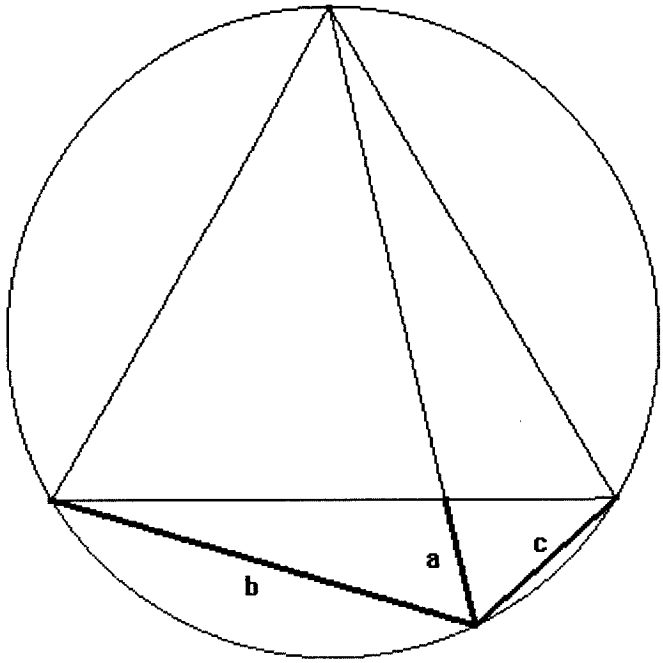
$\rho\sigma = \rho + \sigma$ $\quad \rho/\sigma = \rho - 1$ $\quad 1/\rho + 1/\sigma = 1$

$\sigma^2 = 1 + \rho + \sigma$ $\quad 1/\rho = 1 + \rho - \sigma$

$$\sigma = 1\sigma + 0 + 0$$
$$\sigma^2 = 1\sigma + 1\rho + 1$$
$$\sigma^3 = 3\sigma + 2\rho + 1$$
$$\sigma^4 = 6\sigma + 5\rho + 3$$
$$\sigma^5 = 14\sigma + 11\rho + 6$$
$$\sigma^6 = 31\sigma + 25\rho + 14$$
$$\sigma^7 = 70\sigma + 56\rho + 31$$

對於正三角形,

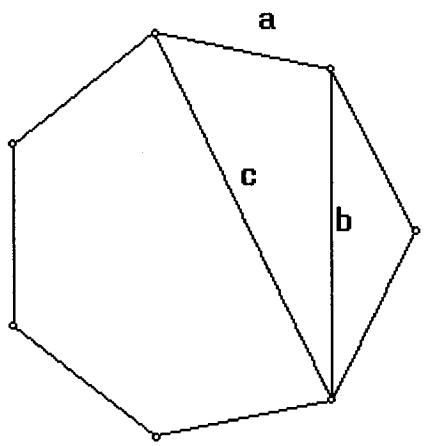
$$\frac{1}{c} + \frac{1}{b} = \frac{1}{a}$$



給定一各邊長爲1之正六邊形, 要如何只用直尺找出長度爲1/2, 1/3, 1/4,....之線段？

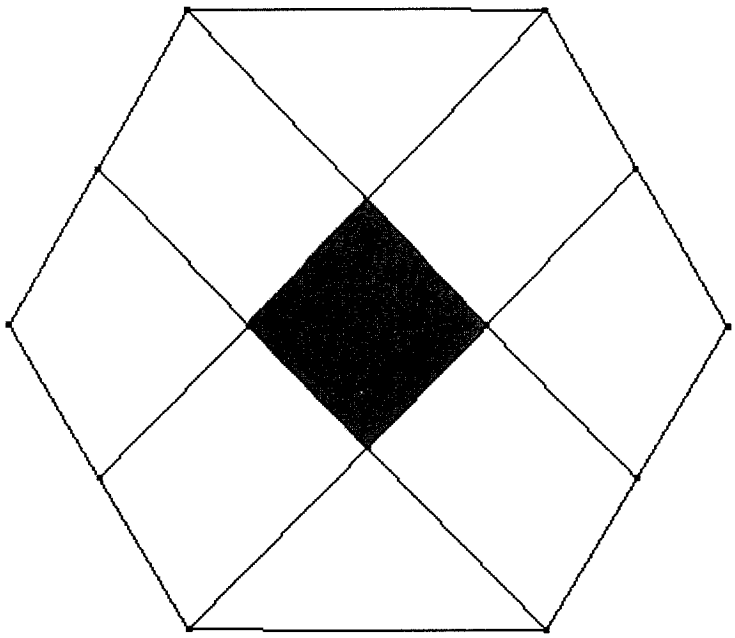
在正七邊形中,

$$\frac{b^2}{a^2} + \frac{c^2}{b^2} + \frac{a^2}{c^2} = 5$$

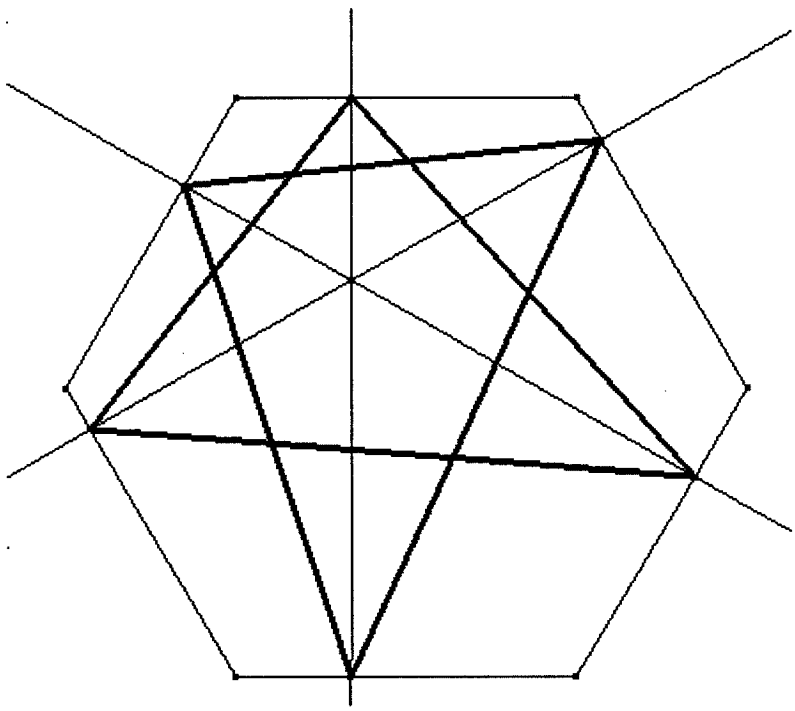


The distance from the midpoint of side AB of a regular convex heptagon $ABCDEFG$, inscribed in a circle, to the midpoint of the radius perpendicular to BC and cutting this side, is equal to half the side of a square inscribed in the circle.

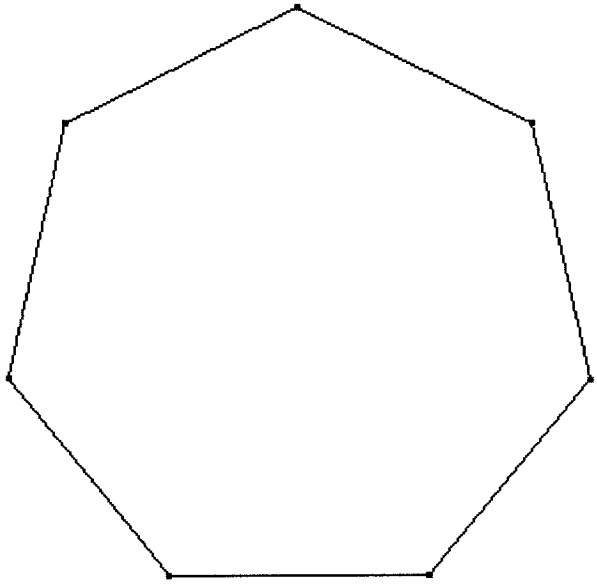
這區域的面積佔整個正六邊形的多少？



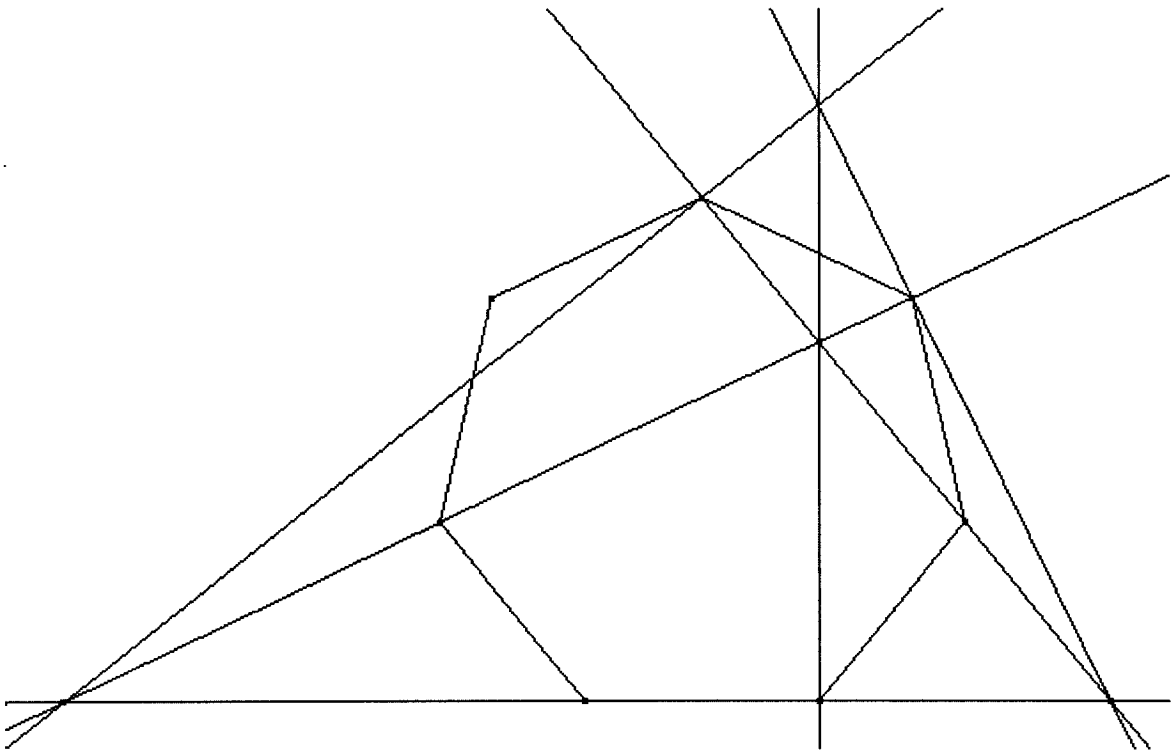
哪個面積較大？



這是正七邊形



加多幾條直線之後變成這樣：



這幅圖說明了什麼定理？「七」很重要嗎？ 要如何推廣這定理？