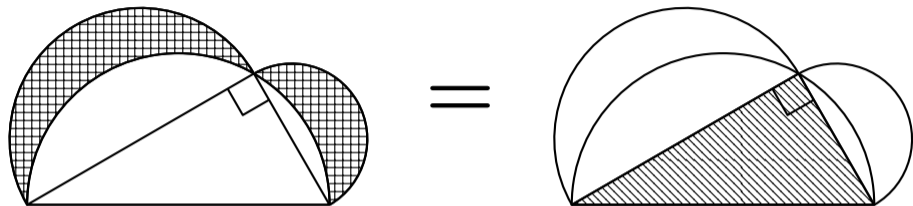
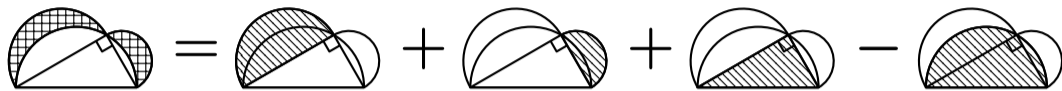


# ヒポクラテスの月形 (三日月)

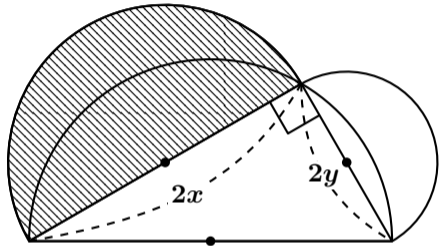


面積が等しい

# ヒポクラテスの月形 (三日月)



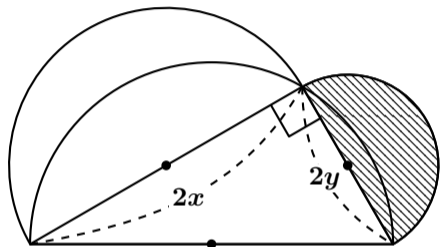
# 証明します



【半径が  $x$  の円】の半分なので面積は  $\frac{\pi x^2}{2}$

$$\text{円の面積} = \pi \times \text{半径}^2$$

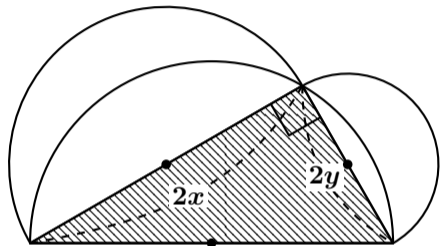
# 証明します



【半径が  $y$  の円】の半分なので面積は  $\frac{\pi y^2}{2}$

$$\text{円の面積} = \pi \times \text{半径}^2$$

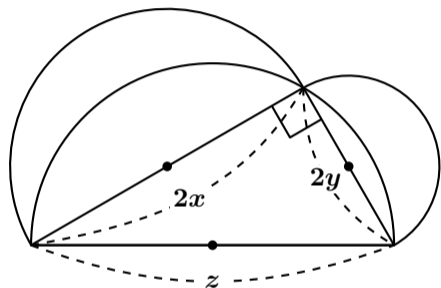
# 証明します



$$\begin{aligned} & \text{底辺} \times \text{高さ} \div 2 \\ &= 2y \times 2x \div 2 \\ &= 2xy \end{aligned}$$

# 証明します

## 三平方の定理を使って



$$z^2 = (2x)^2 + (2y)^2$$

$$z^2 = 4x^2 + 4y^2$$

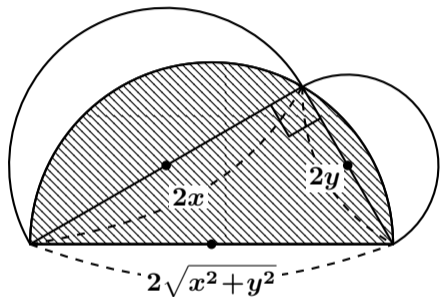
$$z = \sqrt{4x^2 + 4y^2}$$

$$= \sqrt{4(x^2 + y^2)}$$

$$= \sqrt{4} \sqrt{x^2 + y^2}$$

$$= 2\sqrt{x^2 + y^2}$$

# 証明します



【半径が  $\sqrt{x^2 + y^2}$  の円】の  
半分なので面積は

$$\begin{aligned} & \frac{\pi \sqrt{x^2 + y^2}^2}{2} \\ &= \frac{\pi (x^2 + y^2)}{2} \end{aligned}$$

# 証明します

$$\begin{aligned} &= \text{Diagram 1} + \text{Diagram 2} + \text{Diagram 3} - \text{Diagram 4} \\ &= \frac{\pi x^2}{2} + \frac{\pi y^2}{2} + 2xy - \frac{\pi(x^2 + y^2)}{2} \\ &= \frac{\pi x^2}{2} + \frac{\pi y^2}{2} + 2xy - \frac{\pi x^2}{2} - \frac{\pi y^2}{2} \\ &= 2xy \end{aligned}$$