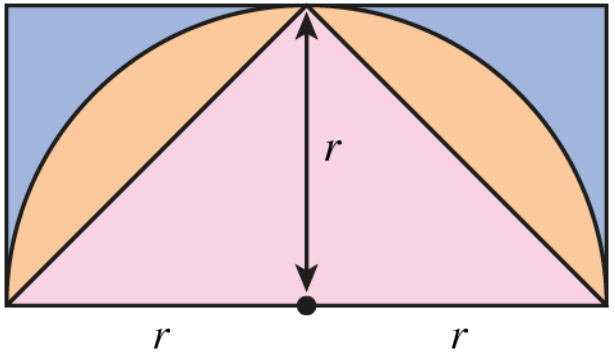
Challenge – Area of a semicircle

Solution

a Area of rectangle = base × height

$= 2r \times r$

$= 2r^2$



Area of triangle = $\frac{1}{2}$ × base × height

$= \frac{1}{2} \times 2r \times r$

$= r^2$

So r^2 < Area of semicircle < $2r^2$. (i.e. $m = 1$ and $n = 2$)

b You could work out the area more accurately by dividing the semicircle into several sectors and rearranging them in an approximate parallelogram shape to calculate the area.

To work out the exact area, you could work out the area of a whole circle with radius r, and then divide this by 2.

Area of semicircle = $\pi r^2 \div 2$

(Notice that $\frac{\pi}{2}$ = 1.5707... , which is between the values of 1 and 2 that you found in part **a**.)