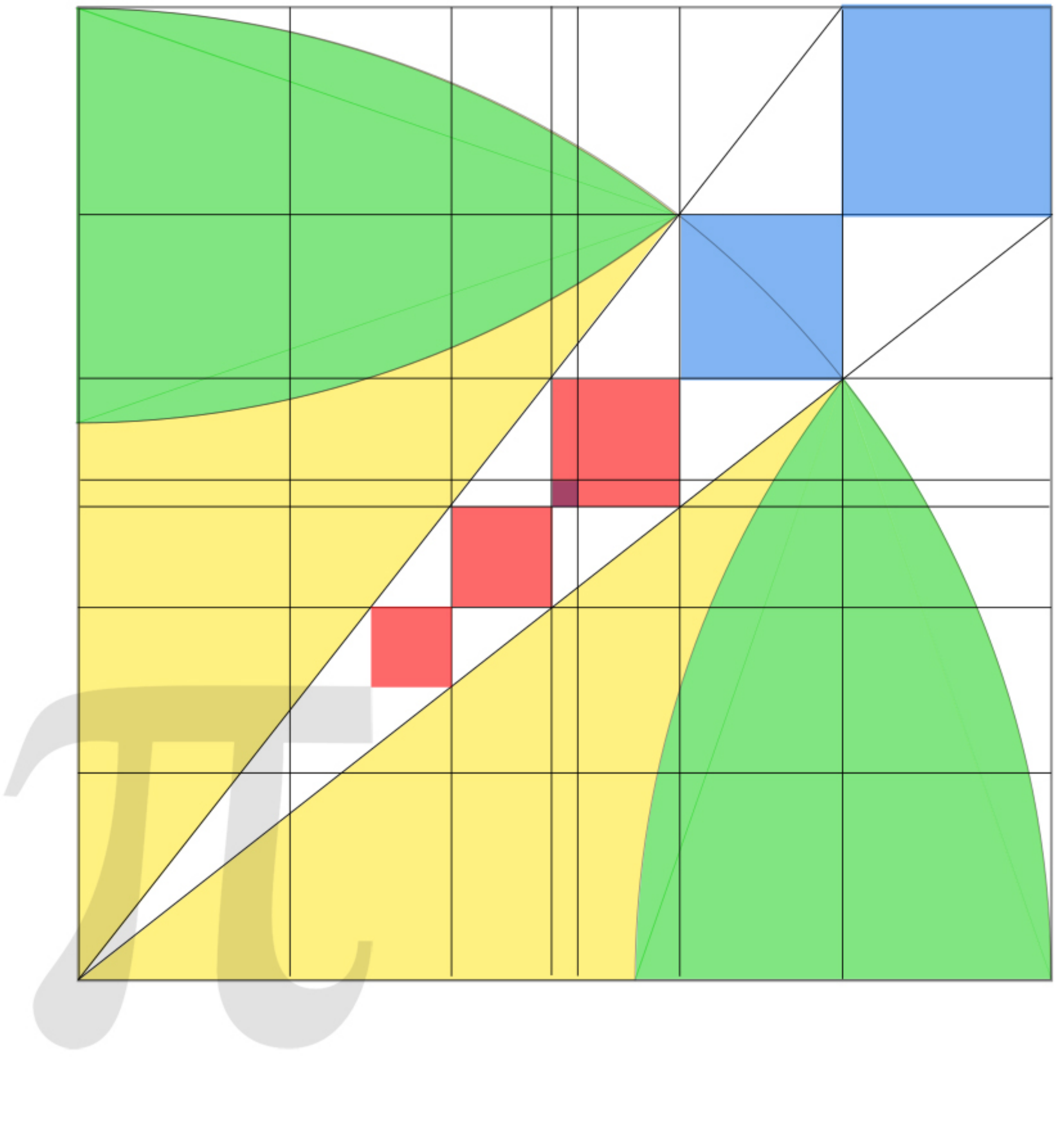
Proof of Pi

(the search for)



Carl Thompson

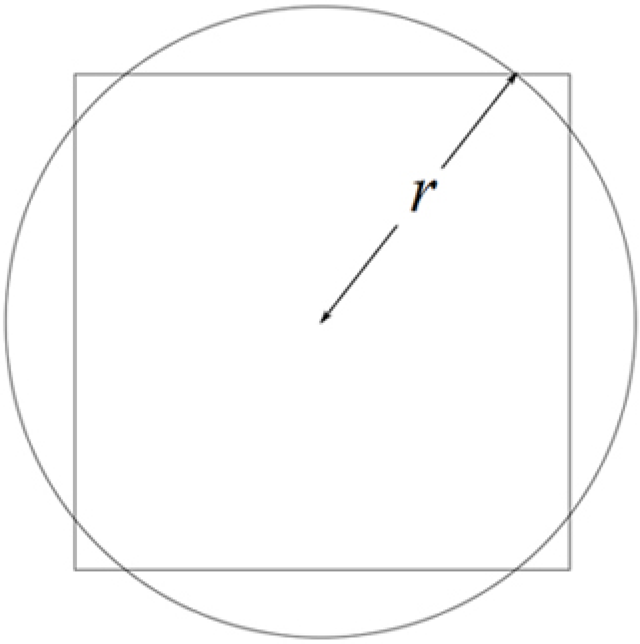
For the past year I have been examining Pi and the relationships between the circle and the square.

The mathematics used in this book aim to be simple and easily understood.

This book 'Proof of Pi' has a companion book called 'Pi verses Pi (a comparison)'.

By Carl D. Thompson

When the circumference of a circle (c) and the perimeter of a square (8h) are equal, we call it a squared circle. Radius (r) is equal to one. (Fig. 1)



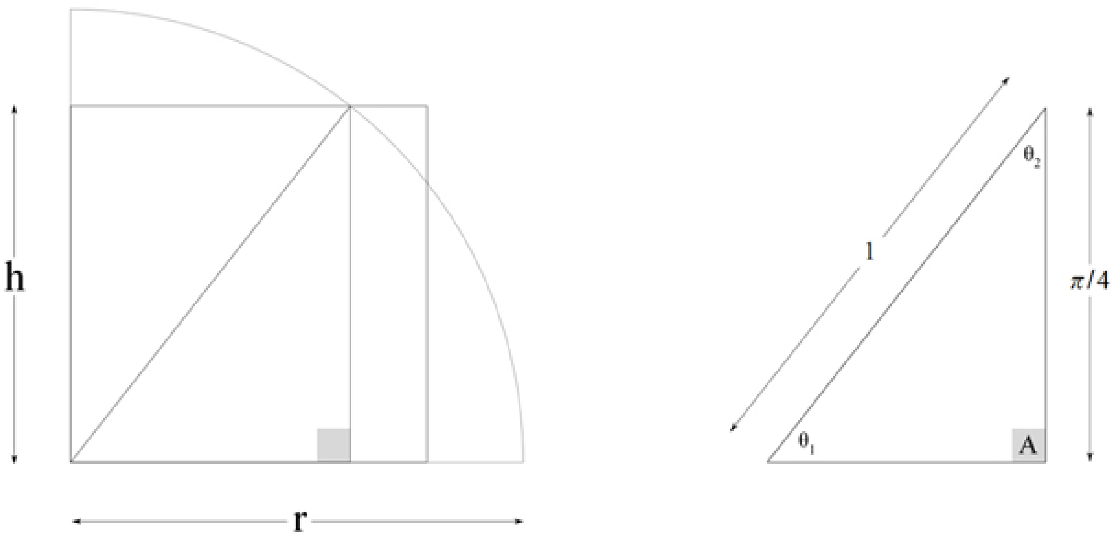
$$c = 2\pi$$

$$8h = 2\pi$$

$$c = 8h$$

(Figure. 1)

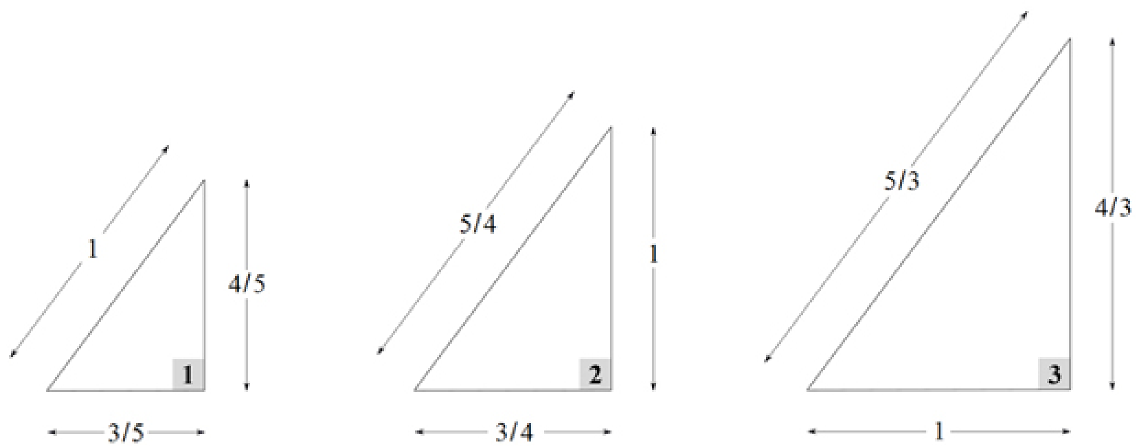
Next we simplify to the quarter squared circle which gives us our first triangle A. (Fig. 2)



(Figure. 2)

Because a triangle has three sides it can be normalised in three ways, with exceptions. A normalised triangle is simply a triangle with one or more side-lengths equal to one. All sets of normalised triangles have the same angles.

See the example below, normalising the 345 triangle. (Fig. 3)

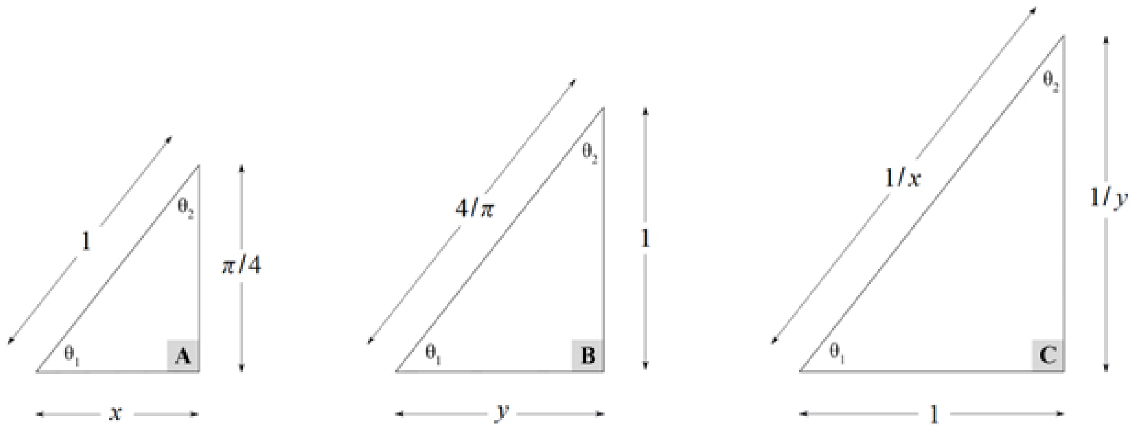


(Figure. 3)

Notice above that the height of triangle 1 is the reciprocal of the hypotenuse of triangle 2, the base of triangle 1 is the reciprocal of the hypotenuse of triangle 3 and the base of triangle 2 is the reciprocal of the height of triangle 3.

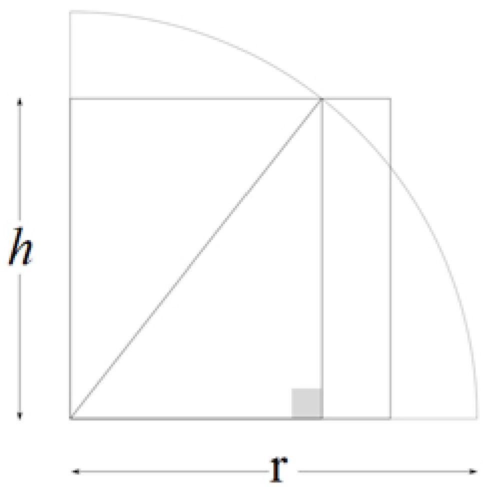
This is the case for all sets of normalised triangles.

We can use this rule to normalise triangle A. (Fig. 4)



(Figure. 4)

When the perimeter of a square (8h) and the circumference of a circle (c) are equal, the ratio of the radius (r) to an eighth of the perimeter (h) will always be 4/Pi. (Fig. 5)



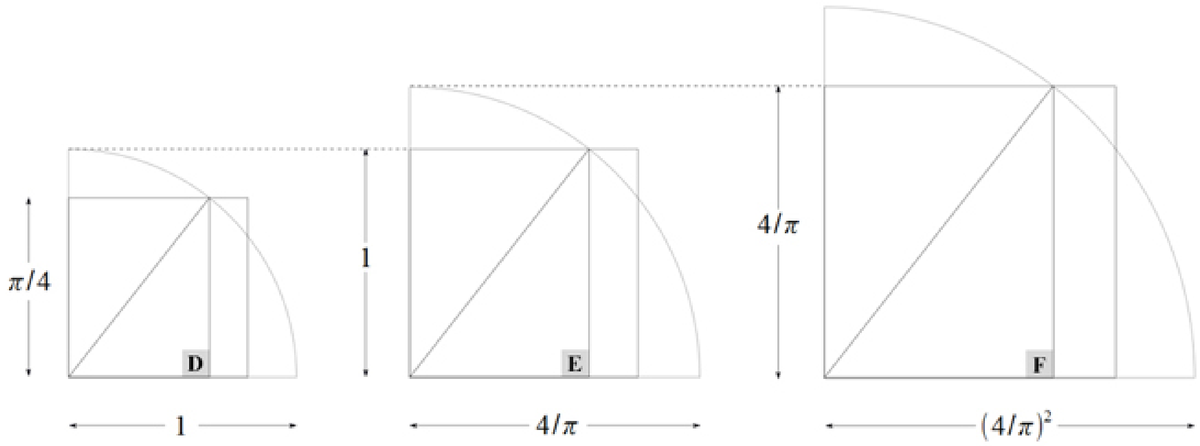
$$c = 2\pi r \quad \text{also} \quad c = 8h$$

$$\therefore \quad 2\pi r = 8h$$

$$\therefore \quad \frac{r}{h} = \frac{4}{\pi}$$

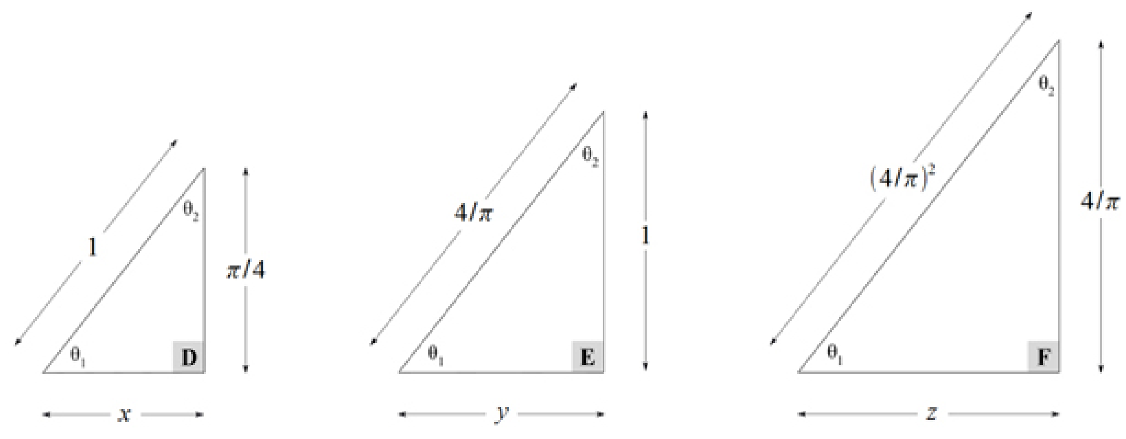
(Figure. 5)

We can use this rule to create three nested versions of the quarter squared circle. (Fig. 6)



(Figure. 6)

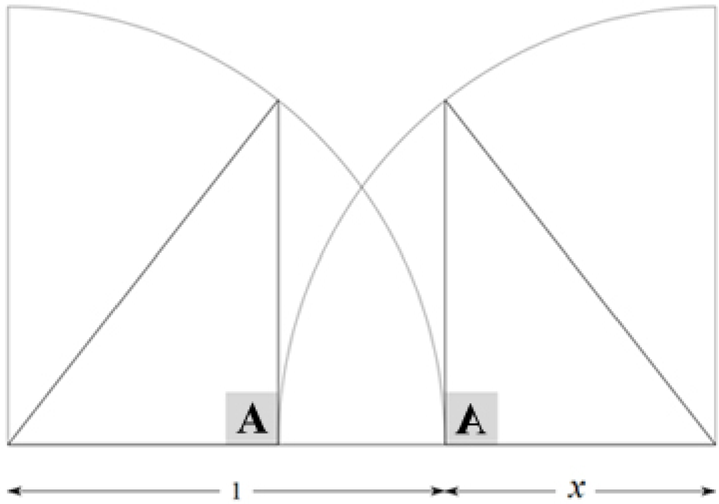
This gives us a second set of triangles D, E and F. (Fig. 7)



(Figure. 7)

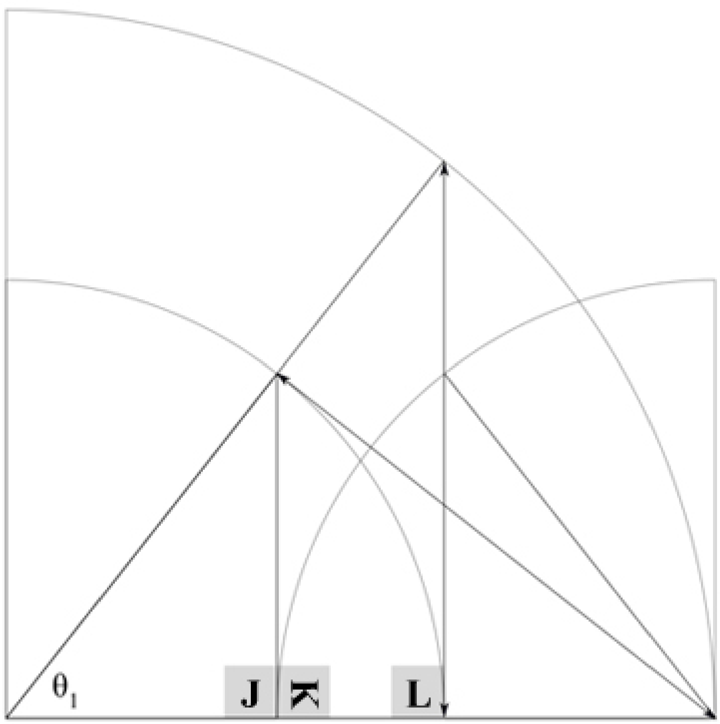
Notice that triangles D and A and triangles E and B are identical but triangles F and C are different.

Next we interlock two quarter squared circles as shown below. (Fig. 8)



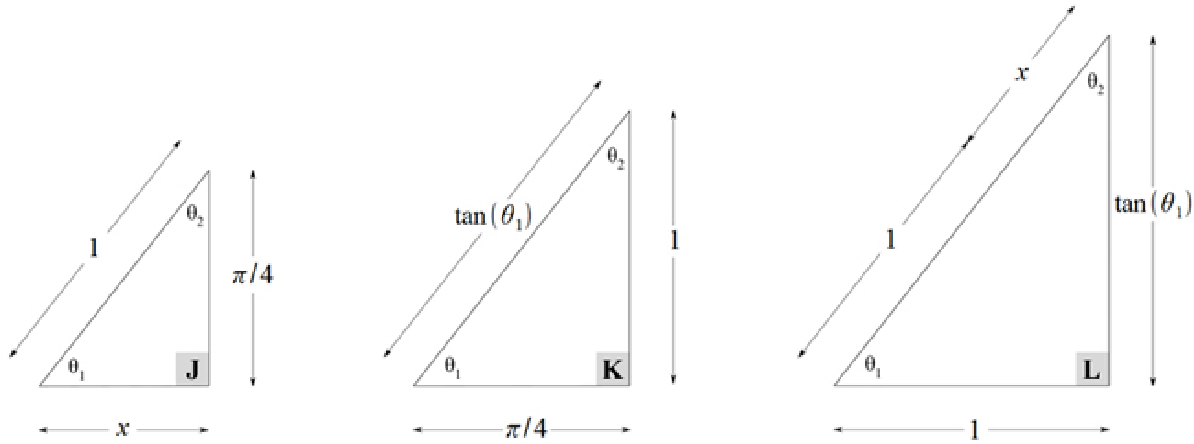
(Figure. 8)

We then add a quarter circle with a radius (1+x). The arrows represent the tangents. (Fig. 9)



(Figure. 9)

This gives us a third set of triangles J, K and L. (Fig. 10)

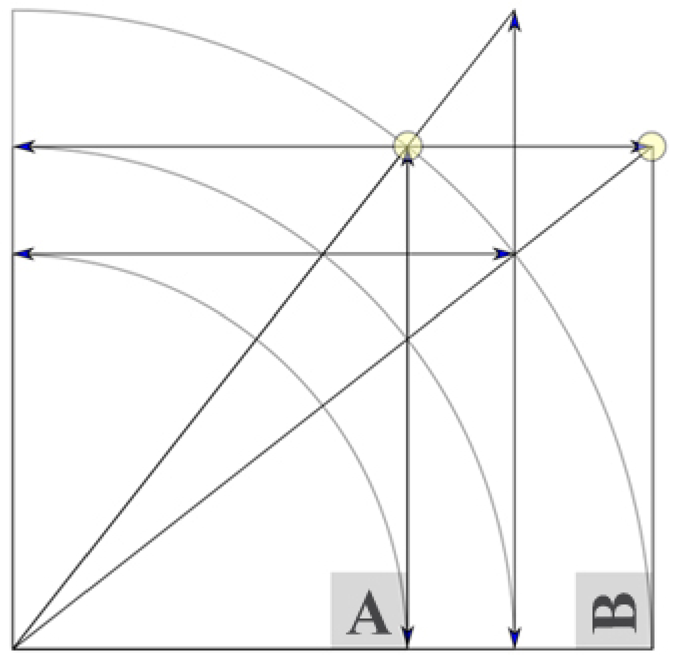


(Figure. 10)

The set of triangles (A, B and C) and the set of triangles (J, K and L) should be identical, because both sets are normalised. If we compare the two sets we can extrapolate the following:

$$y=\pi/4$$
$$1/x=1+x$$
$$\tan(\theta_1)=4/\pi$$

As shown below, it makes sense that y equals Pi/4, because we would expect the two marked points to be at the same height. The arrows represent the tangents. (Fig. 11)



(Figure. 11)

If y equals Pi/4, it means that the triangle set (D, E and F) is also normalised. By comparing the three sets we can extrapolate the following:

$$x=(\pi/4)^2$$

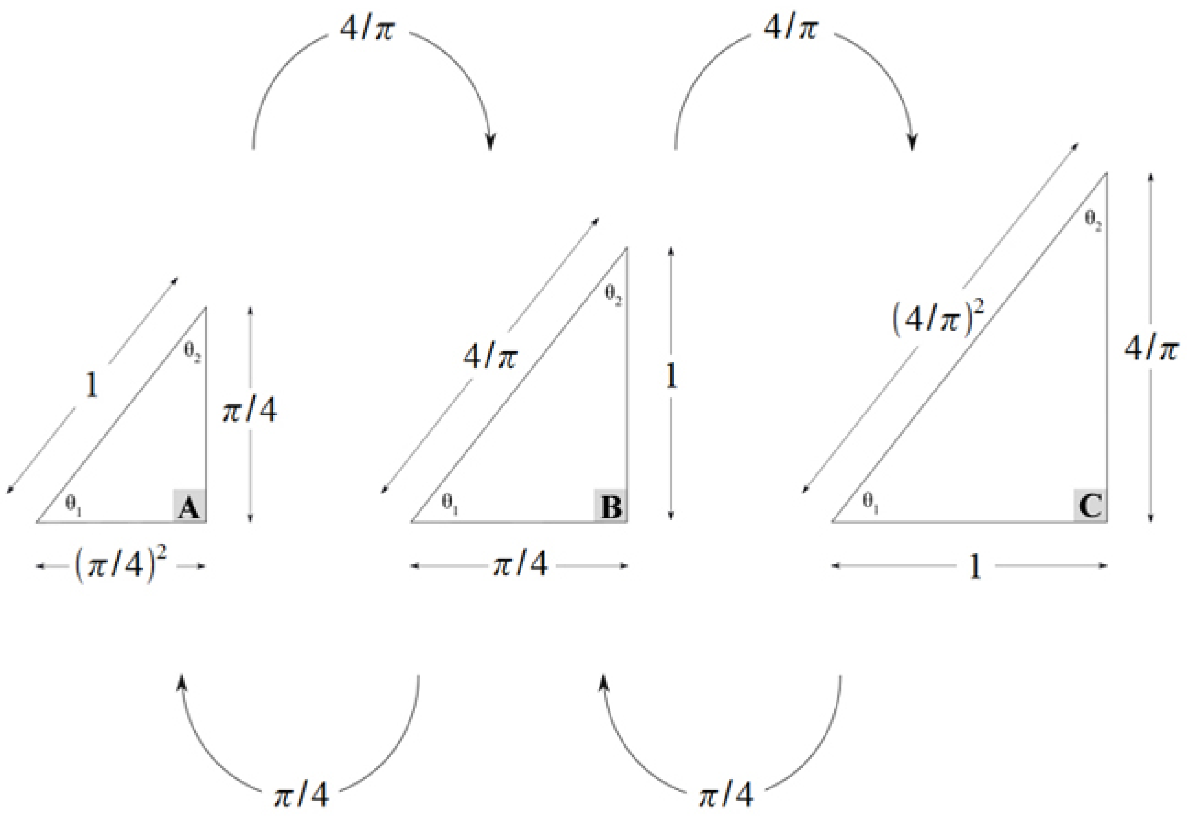
If we do the calculations using the current value of Pi, the equations above fail. This points to the possibility that Pi is incorrect.

So the question becomes, is there a value for Pi that satisfies all of the above equations?

Yes, here it is expressed as a fraction:

$$\pi = 4\sqrt{\sqrt{5/4} - \sqrt{1/4}}$$

If we use the above value for Pi, we find that the three sets of triangles in this book, are in fact the same normalised set. (Fig. 12)



(Figure. 12)

Because the circle and the square are both perfectly symmetrical, we should expect Pi to also have perfect symmetry. This symmetry can be expressed by the following equations:

$$\tan(\theta_1).\sin(\theta_1)=1$$

$$\tan(\theta_1).\cos(\theta_1)=\sin(\theta_1)$$

$$\sin^2(\theta_1)=\cos(\theta_1)$$

$$\cos(\theta_1)+1=\tan^2(\theta_1)$$

So it seems, the angle (theta1) that squares the circle, perfect symmetry, occurs when its sine is equal to the reciprocal of its tangent.

Pi=3.14460551102969314427823434337183571
8092488231350892950659607880404728190489
2436548476515566340325422595160489765784
4522350184148188477210145800112384535316
59969963123944614330895602447224013851..

"Every explicit duality is an implicit unity." Alan W. Watts