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EX.0.2.5, Sauer

Find the first 15 bits in binary representation of π .

(Hint: taking π as 3.1415 or 3.1416 produces the correct 15 first bits.)

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EX.0.2.5, Sauer, solution, Langou

First,

 $(3)_{10} = (11)_2;$

second,

 $(.1416)_{10} = (.0010010000111....)_2.$

The latter because:

.1416

0.2832

0.5664

1.1328

0.2656

0.5312

1.0624

0.1248

0.2496

0.4992

0.9984

1.9968

1.9936

1.9872

and we read the bits on the leftmost column from top to bottom.

$$\pi = (11.0010010000111...)_2$$

Note: these are the 15 first bits of π however the 15 bits number the closest from π would be

 $(11.0010010001000...)_2$