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Proofs

Proof:

Claim #	Claim	Evidence	Reasoning
1	$\pi < 4$	Claim 4	Claim 4
2	A circle (C) drawn, with the center at point a and a radius of 1 will have an area of $\pi$	Area of a Circle	$A = \pi r^2$
3	A square (S), constructed with its center at point a, and going out 1 in every direction, will have an area of 4	Area of a Square	$A = s^2$
4	$C < S$	Lemma 1	Lemma 1

Lemma 1:

Claim #	Claim	Evidence	Reasoning
1	A shape inscribed in another will be smaller	Claim 7	Claims 2-7
2	Shape A (the bigger shape), Shape B (the smaller shape)	N/A	Given
3	Take a point within shape b, call it d	N/A	Given
4	Draw a straight, finite line from d, until it hits the perimeter of shape A, with two points along the line, one on shape A (point e), and one on shape B (point f), where e and f do not touch	N/A	Given
5	Repeat step 4 one time, making points G (touching A) and H (touching B), where E, F, G, and H do not touch	N/A	Given
6	Because shape B is inside A, Area of a = area of b + area of EFGH	N/A	Addition
7	Area of A > Area of B	Transitive Property	Claims 2-6

