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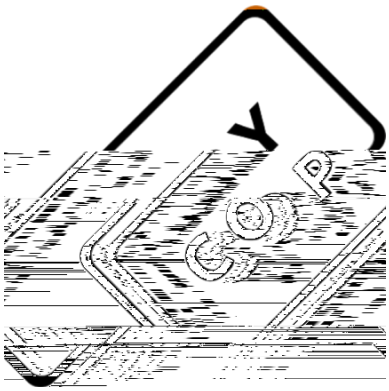
University of North Georgia
Mathematics Tournament
April 2, 2016

A copying machine can make copies that are 80%, 100%, or 150% as large as the original. By making copies of copies, what is the smallest number of times one must use the machine to obtain a copy that is 324% as large as the original?



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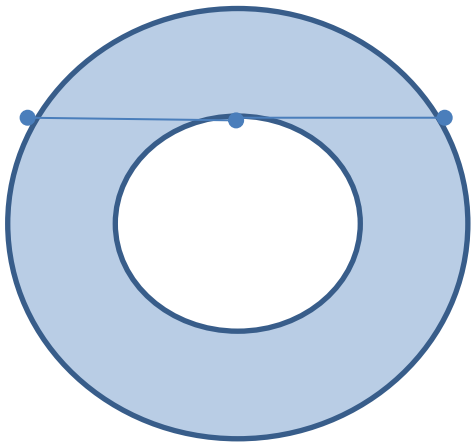
Knowing that the segment shown in the picture is 8 inches long, calculate the shaded ring area between the two circles. Give the result in square inches, approximated to three decimal places.



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If $a^2 \quad 5a \quad 2 \quad 0$

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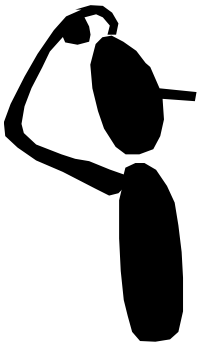

Solve the equation and find TWO integer solutions.

$$2\log_{18x-1^2x-7}\left(x^2-4x-3\right)=\log_{x^2-4x-3}\left(18x-1^2x-7\right)^3$$

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Find $\frac{\sqrt{\frac{1}{2}}}{\sqrt{\frac{1}{3}}}$.