Precalculus
The inequality $a^x \geq A$, part 2.

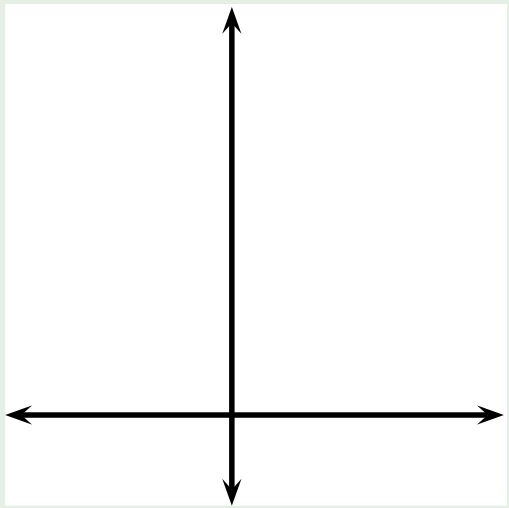
Todor Milev

2019

Example

Solve the inequality.

$$2^{-3x-5} < 7$$



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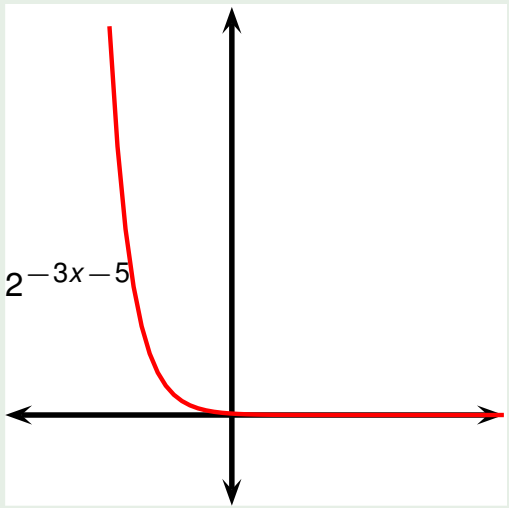

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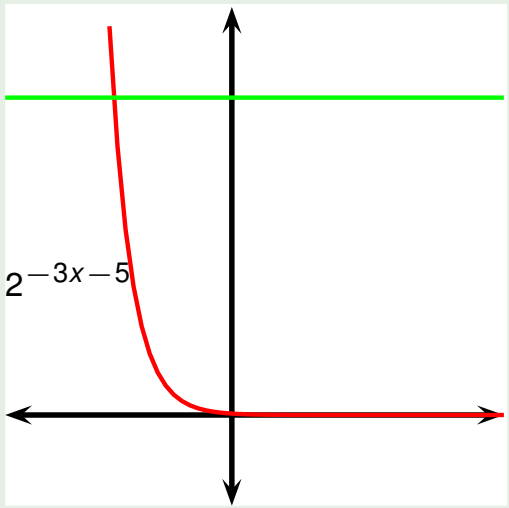

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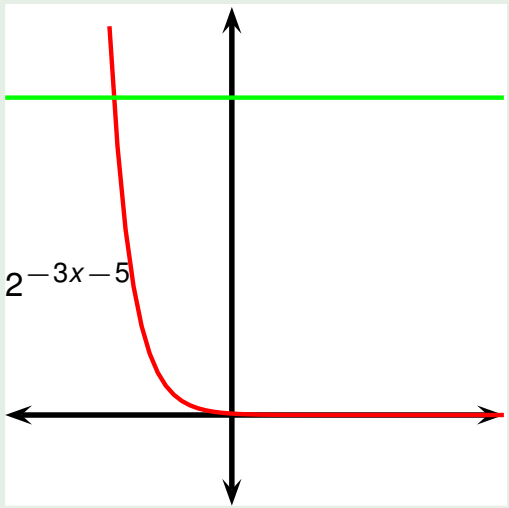
$$\log_2 2^{-3x-5} < \log_2 7$$

Logarithms preserve inequalities: apply $\log_2$



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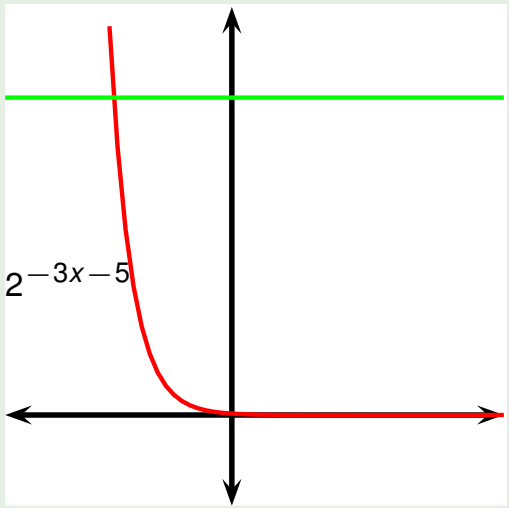

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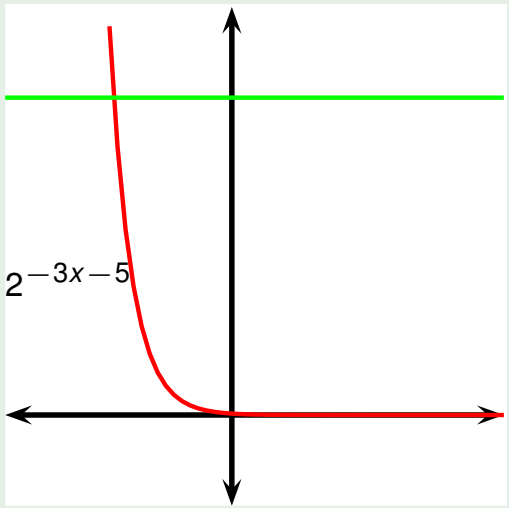

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$$\begin{aligned} 2^{-3x-5} &< 7 \\ \log_2 2^{-3x-5} &< \log_2 7 \\ -3x-5 &< \log_2 7 \\ -3x &< \log_2 7 + 5 \end{aligned}$$

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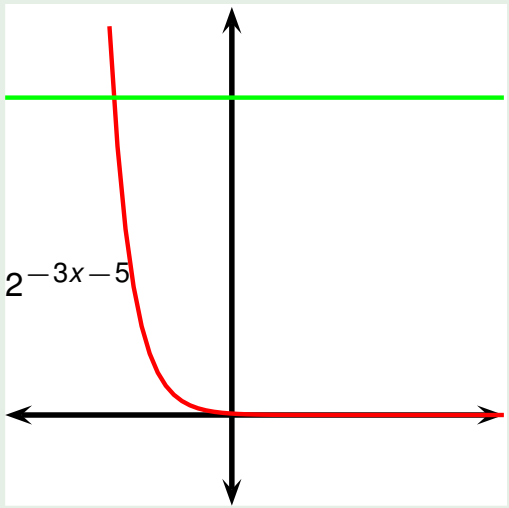

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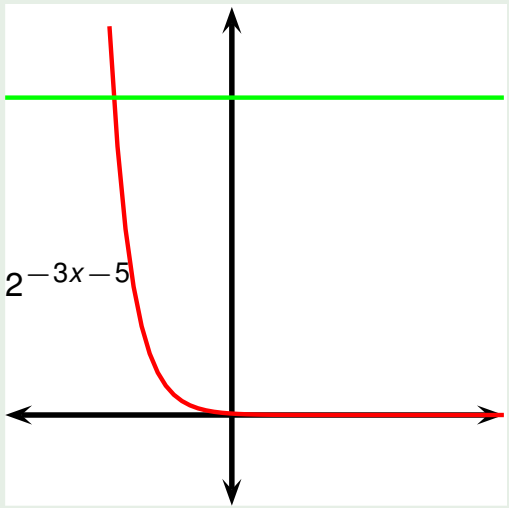
Division by negative number flips inequalities

$$x > -\frac{\log_2 7 + 5}{3}$$



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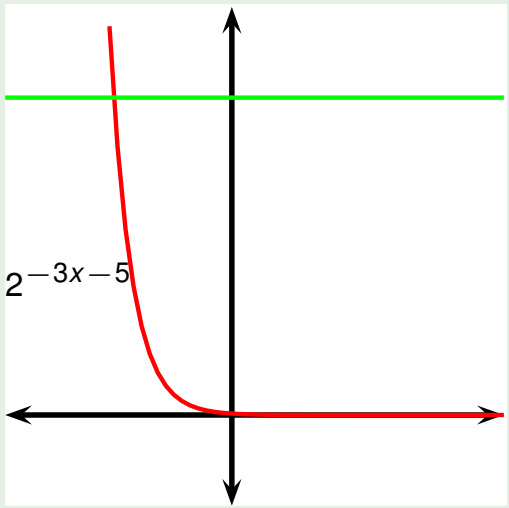

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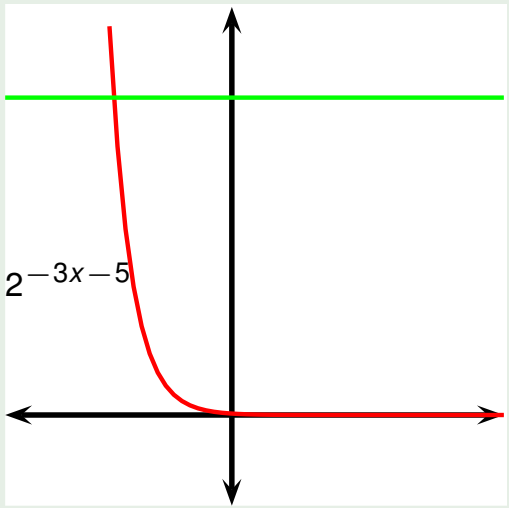

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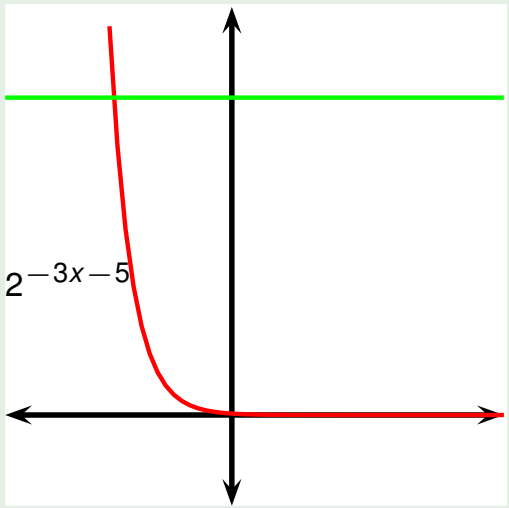

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