

Re: How do I do this problem without a calculator?

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One approach, not discussed by other notes in this thread so far, would be to consider the computation modulo 2 and again modulo 11. You can then piece together the answer modulo 22 from the separate answers for 2 and 11.

This approach is very enticing, but I don't know how to "piece together" the results.

$6^{19} \bmod 2$  is 0  
 $6^{19} \bmod 11$  is 2

Now I know that the answer is  $6^{19} \bmod 22$  is 2, but I know that from doing the problem, not from the facts above. Is there a generic rule to use?

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