

Re: $P(\prod_i p_i^{k_i} | n) = ?$

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- *From:* temptony@xxxxxxxxxxxx
 - *Date:* Fri, 30 Nov 2007 08:42:49 -0800 (PST)
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On Nov 30, 5:40 pm, tempt...@xxxxxxxxxxxx wrote:

On Nov 30, 12:35 pm, "I.N. Galidakis" <morph...@xxxxxxxxxxxx> wrote:

Apologies if this is a stupid question.

What is the probability that n has the form $\prod_i p_i^{k_i} m$, p_i prime?

Not stupid, but more complicated than it needs to be. Let $x = \prod_i p_i^{k_i}$. Then if I understand you correctly, you are just asking for the probability that x divides n .

snip

$$P(n = \prod_i p_i^{k_i} m) = \prod_i p_i^{-k_i}$$

In other words, $P(x \text{ divides } n) = 1/x$. Which is true, if you use a reasonable definition of the left-hand side: for instance, the limit as N tends to infinity of $P(x \text{ divides } n)$, when x is equal to one of $1, 2, \dots, N$ with equal probability.

I mean 'when n is equal to one of...'.
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