

Elementary Number Theory
HINTS FOR PROBLEM SET 2

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Problem 1. (a) *Hint.* What should the prime factorizations of s and t look like?
(b) *Hint.* How many square-free integers can be made from the primes less than x ? How many squares are there less than x ?

Problem 2. *Hint.* If $v_p(n) = \ell$, what do the base p expansions of n and $n - 1$ look like?

Problem 3. *Hint.* Use Problem 2 to show that $v_2(m!)$ is not too far from m for any $m \in \mathbb{N}$.

Problem 4. There is no hint for this problem.

Problem 5. (b) *Hint.* One couldn't help but wonder why Part (a) is there.

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