4.3 Primes and Greatest Common Divisors

4.3 pg 272 # 3

Find the prime factorization of each of these integers.

a) 88

b) 126

c) 729

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Determine whether the integers in each of these sets are pairwise relatively prime.

a) $11, 15, 19$

b) $14, 15, 21$

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What are the greatest common divisors of these pairs of integers?

a) $3^7 \cdot 5^3 \cdot 7^3, 2^{11} \cdot 3^5 \cdot 5^9$

b) $11 \cdot 13 \cdot 17, 2^9 \cdot 3^7 \cdot 5^5 \cdot 7^3$

c) $23^{31}, 23^{17}$

d) $41 \cdot 43 \cdot 53, 41 \cdot 43 \cdot 53$

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What is the least common multiple of these pairs of integers?

a) $3^7 \cdot 5^3 \cdot 7^3, 2^{11} \cdot 3^5 \cdot 5^9$

b) $11 \cdot 13 \cdot 17, 2^9 \cdot 3^7 \cdot 5^5 \cdot 7^3$

c) $23^{31}, 23^{17}$

d) $41 \cdot 43 \cdot 53, 41 \cdot 43 \cdot 53$

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Find gcd(92928, 123552) and lcm(92928, 123552) and verify that gcd(92928, 123552)·lcm(92928, 123552) = 92928 · 123552. [Hint: First find the prime factorizations of 92928 and 123552.]

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Use the Euclidean algorithm to find

   c) $\gcd(1001, 1331)$

   f) $\gcd(9888, 6060)$