MATH 120 - HW 1
Name:
Please complete the following questions, showing work when necessary.
Incorrect answers without any work will receive 0 points.

(1) [5 Points] Write a sentence of the form \((P \land \sim Q) \lor R\).
(2) [5 Points] What is the 16th term in the geometric sequence 2, 4, 8, 16,...?
(3) [5 Points] If the universal set, \(U\), is the set of all letters in the English alphabet, \(A = \{a, b, c, q\}\) and \(B = \{d, e, f, g, h, z\}\), what is \(n((A \cup B)^C)\)?
(4) [15 Points] What is 132124 in Base-2?
(5) [15 Points] Which of the following numbers have an ODD representation (not divisible by 2) in Base-10: 743518; 1001101102; 1022102203; 9153.
(6) [15 Points] What is the only value that a number in Base-5 can have as its rightmost element (the constant term in the sum) if it is divisible by 5 in Base-10?
(7) [15 Points] Derive (come up with) a rule for determining when a number expressed in Base-3k—i.e., the base is a multiple of 3—has a Base-10 representation that is divisible by 3.