

MATH 187 – Section 002 – Quiz 2

You may work with other class members on this quiz, but you may *not* receive assistance from people not in MATH 187, Section 002. You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or YOU WILL GET A 'ZERO' ON THE QUIZ. Your work on this quiz must be handed in by the beginning of class on Friday, 8 February 2008. GOOD LUCK!

- 1) Prove that the product of two odd integers is odd.
- 2) Let x and y be integers. Prove or disprove: x and y are even if and only if xy is even. Explain your reasoning thoroughly.
- 3) Prove: " $(x \vee y) \rightarrow z$ " is logically equivalent to " $(x \rightarrow z) \wedge (y \rightarrow z)$ ".
- 4) In Canada, letters that are properly addressed include a "postal code" (similar to the U.S. zip code). One such postal code is "V8X 3X4". All proper postal codes consist of three letters (A-Z) and three digits. (0-9).
 - a) How many Canadian postal codes can exist?
 - b) How many Canadian postal codes can exist if no letters are repeated?
 - c) How many Canadian postal codes can exist if no digits are repeated?
 - d) How many Canadian postal codes can exist if no characters (letters or digits) are repeated?
 - e) How many Canadian postal codes can exist that do not contain the letter "W"?
 - f) How many Canadian postal codes can exist that contain the digit "4"?