**DIVISIBILITY**

**WHEN AN INTEGER IS DIVIDED BY A SECOND NONZERO INTEGER, THE QUOTIENT MAY OR MAY NOT BE AN INTEGER. FOR EXAMPLE, 24/8 = 3 IS AN INTEGER. WHILE 17/5 = 3.4 IS NOT. THIS LEADS TO THE FOLLOWING THEOREM:**

**DEFINITION**

**IF AND ARE INTEGERS, WE SAY THAT  *DIVIDES b***

***(a |b),*  IF THERE IS AN INTEGER SUCH THAT**

**EXAMPLE: 13 | 182 , -5 | 30, 17 | 289, 7 | 144 (7 does not divide 144)**

**THEOREM (ASSIGNMENT NO 1)**

**For integer a, b and c, the following hold:**



**THEOREM (DIVISION ALGORITHM)**

**LET WITH *THEN, THERE* EXIST UNIQUE INTEGERS AND SUCH THAT**