**Casey Levy**

**Quiz #3**

**#1.**

Assume for the contradiction that 6 – 7 √2 is rational. This gives us 6-7√2 = a/b. √2 = 6/7 – a/7b. This shows √2 equals the difference of two rational numbers, therefore proving the contradiction that the equation is rational.

**#2.**

Suppose for the contradiction that a AND b are rational, and ab is irrational. Using integers c, d, e, and f, with d != 0 and f !=0, we can see a = c/d and b = e/f. Then, ab = ce/df. With ce/df being integers, this proves that ab is rational, which contradicts the original statement saying if ab is irrational, then b is irrational.

**#3.**

If we use 1 in A’s equation, we get 18(1) – 2 = 16. Since A proclaims to be a subset of B, we plug 16 into B’s equation, such that 18b +16 = 16. This becomes 18b = 0 and 0/18 is not an integer, therefore making 16 not an element of B. In result, A is **not** a subset of B.

**#8.**

{{}, {-3}, {0}, {-3,0}}

**#9.**

[{2}, {2,1,1}, {2,2,2}, {1,1} {1,2}, {2,1}, {2,2}]