RayAnne Hill

Proof #2

**Show that V(aX + b) = V(X) for a discrete random variable X.**

**PROOF:** We show that V(aX + b) = V(X) for a discrete random variable. From earlier work, we know the computational form of varience which is V(x) = E() - .

So we see that V(aX + b) = E() - .

= E( + 2baX + ) – [].

By theorem 3.5, we may simplify as such

= E() – [].

By theorem 3.4, we may simplify by moving the constants

= .

By collecting like terms we now have

=

=

We stated earlier that this was the computational form of Variance so we substitute and see that

= .

Therefore, we see that V(aX + b) = .