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Proof # 1

**Show that the definition form of the variance****, V(x) = E[] is equivalent to the computational form of V(X) = .**

**PROOF:** We show that the definition form of the variance, V(x) = E[], is equivalent to the computational form of V(X) = .

V(x) = E[]

We begin by using the foil method to simplify

= E[]

We use theorem 3.5 to simplify as such

=

Because is a constant it may be pulled out to get

=

We were given that E(X) = . There for we see

=

=

As we had just stated that E(X) = then we may substitute to get

=

Which is what we said was the computational form. Thus, V(x) = E[] = .