> **Mx(t) =** $\int_0^1 e^{t \cdot x} \cdot 3 \cdot x^2 \, dx$

$$\frac{3\left(e^t t^2 - 2 e^t t + 2 e^t - 2\right)}{t^3} \tag{1}$$

Now get Mx'(t).

> *diff*((**1**), *t*)

$$\frac{3 e^t}{t} - \frac{9\left(e^t t^2 - 2 e^t t + 2 e^t - 2\right)}{t^4} \tag{2}$$

Now get the limit as t approaches 0 to find the mean.

> *limit*((**2**), $t = 0$)

$$\frac{3}{4} \tag{3}$$

Now get Mx''(t).

> *diff*((**2**), *t*)

$$\frac{3 e^t}{t} - \frac{12 e^t}{t^2} + \frac{36\left(e^t t^2 - 2 e^t t + 2 e^t - 2\right)}{t^5} \tag{4}$$

Now get the limit as t approaches 0 to find the variance.

> *limit*((**4**), $t = 0$)

$$\frac{3}{5} \tag{5}$$

>