

```
In[ ]:= (*Model function*)
f = z1 + z2^2 + z1*z2 + z2*z3^2
```

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Out[ ]:= z1 + z1 z2 + z2^2 + z2 z3^2
```

```
In[ ]:= (*Compute expansion expressions*)
```

$$f_0 = \int_0^1 \int_0^1 \int_0^1 f \, dz_1 \, dz_2 \, dz_3$$

$$f_1 = \int_0^1 \int_0^1 f \, dz_2 \, dz_3 - f_0$$

$$f_2 = \int_0^1 \int_0^1 f \, dz_1 \, dz_3 - f_0$$

$$f_3 = \int_0^1 \int_0^1 f \, dz_1 \, dz_2 - f_0$$

$$f_{12} = \int_0^1 f \, dz_3 - f_1 - f_2 - f_0$$

$$f_{13} = \int_0^1 f \, dz_2 - f_1 - f_3 - f_0$$

$$f_{23} = \int_0^1 f \, dz_1 - f_2 - f_3 - f_0$$

```
Out[ ]:= 5
4
```

```
Out[ ]:= -3/4 + 3 z1/2
```

```
Out[ ]:= -5/4 + z2/3 + z2^2 + (1+z2)/2
```

```
Out[ ]:= -5/12 + 1/2 (1/2 + z3^2)
```

```
Out[ ]:= 3/4 - z1/2 + 1/2 (-1 - z2) + z1 z2
```

```
Out[ ]:= 1/4 - z1/2 + 1/2 (-1/2 - z3^2) + 1/2 (z1 + z3^2)
```

```
Out[ ]:= 5/12 + 1/2 (-1 - z2) - z2/3 + (1+z2)/2 + z2 z3^2 + 1/2 (-1/2 - z3^2)
```

```

In[ ]:= (*Compute variances*)

fVar = 1.0 *  $\int_0^1 \int_0^1 \int_0^1 f^2 \, dz_1 \, dz_2 \, dz_3 - f_0^2$ 

fiVar[expr_, z_] := 1.0 *  $\int_0^1 \text{expr}^2 \, dz$ 

fijVar[expr_, zi_, zj_] := 1.0 *  $\int_0^1 \int_0^1 \text{expr}^2 \, dz_i \, dz_j$ 

fVar[f1, z1]
fVar[f2, z2]
fVar[f3, z3]

fijVar[f12, z1, z2]
fijVar[f13, z1, z3]
fijVar[f23, z2, z3]

```

Out[ ]= 0.509722

Out[ ]= 0.1875

Out[ ]= 0.285648

Out[ ]= 0.0222222

Out[ ]= 0.00694444

Out[ ]= 0.

Out[ ]= 0.00740741