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In[ ]:= ClearAll["Global`*"]
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In[ ]:= (* equation for a normal distribution*)
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```
normFunc = (1 / (σ * Sqrt[2 * π])) * Exp[- ((x - μ)^2) / (2 * σ^2)]
```

$$\text{Out[]} = \frac{e^{-\frac{(x-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}$$

```
In[ ]:= (* power map function *)
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```
powFunc = (c0 + c1 z) * x^3
```

$$\text{Out[]} = x^3 (c_0 + z c_1)$$

```
In[ ]:= (* equation for expected power: Integrate g(x)*f(x) between -
```

```
inf to inf where g(x) is a function of the variable and f(y) is the variable*)
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```
expVal = Simplify[Integrate[powFunc * normFunc,
{x, -Infinity, Infinity}, Assumptions -> σ > 0]]
```

$$\text{Out[]} = \mu (\mu^2 + 3 \sigma^2) (c_0 + z c_1)$$

```
(* equation for power variance: Var[x] = E[x^2] - (E[x])^2*)
```

```
varVal = Simplify[
Integrate[(powFunc^2) * normFunc, {x, -Infinity, Infinity}, Assumptions -> σ > 0] -
Integrate[powFunc * normFunc, {x, -Infinity, Infinity}, Assumptions -> σ > 0]^2]
```

$$\text{Out[]} = 3 (3 \mu^4 \sigma^2 + 12 \mu^2 \sigma^4 + 5 \sigma^6) (c_0 + z c_1)^2$$