

## 1.1 Tex Gyre Bonum Lua

### THEOREM 1.1—RESIDUE THEOREM

Let  $f$  be analytic in the region  $G$  except for the isolated singularities  $a_1, a_2, \dots, a_m$ . If  $\gamma$  is a closed rectifiable curve in  $G$  which does not pass through any of the points  $a_k$  and if  $\gamma \approx 0$  in  $G$  then

$$\operatorname{Res}_{z=a} f(z) = \operatorname{Res}_a f = \frac{1}{2\pi i} \int_C f(z) dz = \frac{1}{2\pi i} \int_\gamma f = \sum_{k=1}^m n(\gamma; a_k) \operatorname{Res}(f; a_k)$$

where  $C \subset D \setminus \{a\}$  is a closed line  $n(C, a) = 1$  (e. g. a counterclockwise circle loop).  $\square$

### Some bold math

If the radio channel is modeled as an LTV system, the observed noisy signal  $\mathbf{y}(t)$  will be

$$\mathbf{y}(t) = \int_0^\infty \mathbf{H}(t, \tau) \mathbf{u}(t - \tau) d\tau + \mathbf{e}(t), \quad (1.1)$$

where  $t$  is the time when the receive antenna observes the signal,  $\tau$  is the time delay in the channel, and  $\mathbf{e}(t) \sim \mathcal{CN}(0, \mathbf{\Sigma})$  is additive zero mean circular symmetric complex Gaussian noise with a positive definite covariance matrix  $\mathbf{\Sigma} \in \mathbb{R}^{n_x \times n_x}$ . The probability density function of the distribution is given by

$$\mathcal{CN}(\mathbf{x}|\mathbf{m}, \mathbf{\Sigma}) = \frac{1}{\pi^{n_x} |\mathbf{\Sigma}|} \exp\{-\mathbf{x} - \mathbf{m} \}^* \mathbf{\Sigma}^{-1} (\mathbf{x} - \mathbf{m}), \quad (1.2)$$

where  $\mathbf{m} \in \mathbb{C}^{n_x}$  denotes the mean,  $\mathbf{x} \in \mathbb{C}^{n_x}$  denotes the random variable,  $(\cdot)^*$  denotes Hermitian transpose, and  $|\cdot|$  denotes determinant.

### Verbatim and ttfont

aacceemmn

The quick **brown fox jumps** over the lazy dog. "12345"

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\[
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= \frac{1}{2\pi i} \int\limits_C f(z)\, \mathrm{d}z =
\frac{1}{2\pi i} \int_\gamma f =
\sum_{k=1}^m n(\gamma; a_k) \text{Res}(f; a_k)
\]
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### Svenska

Gud hjälpe Zorns mö qvickt få byxa.