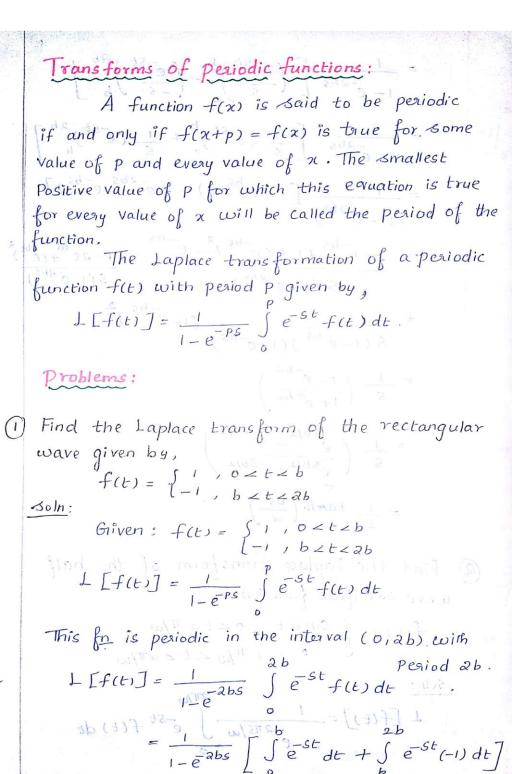




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### **DEPARTMENT OF MATHEMATICS**







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#### **DEPATMENT OF MATHEMATICS**

$$= \frac{1}{1 - e^{2bs}} \left[ \left( \frac{e^{-st}}{-s} \right)_b^b - \left( \frac{e^{-st}}{-s} \right)_b^{2b} \right]$$

$$= \frac{1}{1 - e^{2bs}} \left[ \frac{e^{-st}}{-s} \right]_b^b + \frac{1}{5} \left( e^{-st} \right)_b^b$$

$$= \frac{1}{1 - e^{2bs}} \left[ -\left( e^{-bs} \right)_b^b + \frac{1}{5} \left( e^{-st} \right)_b^{2b} \right]$$

$$= \frac{1}{5} \left( \frac{e^{-bs}}{1 - e^{-bs}} \right) \left[ -\left( e^{-bs} \right)_a^2 - e^{-bs} \right]$$

$$= \frac{1}{5} \left( \frac{1 - e^{-bs}}{1 + e^{-bs}} \right)$$

$$= \frac{1}{5} \left( \frac{1 - e^{-bs}}{1 + e^{-bs}} \right)$$

$$= \frac{1}{5} \left( \frac{e^{-bt}}{1 - e^{-bt}} \right)$$

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#### **DEPARTMENT OF MATHEMATICS**

$$\frac{1}{1-e^{-2\pi s}/\omega} \left[ \int_{0}^{-st} e^{-st} \sin \omega t \, dt + o \right]$$

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$$\frac{1}{1-e^{-2\pi s}/\omega} \left[ \int_{0}^{-s\pi/\omega} (-s\sin \omega t + \omega) \cos \omega t \right]_{0}^{-s\pi/\omega}$$

$$= \omega \left[ 1+e^{-s\pi/\omega} \right]$$

$$(1-e^{-s\pi/\omega}) \left( s^{2} + \omega^{2} \right)$$

$$= \omega \left( 1-e^{-s\pi/\omega} \right) \left( s^{2} + \omega^{2} \right)$$

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### DEPARTMENT OF MATHEMATICS

$$= \frac{1}{1 - e^{2as}} \left\{ \left[ \left( -a \frac{e}{s} - \frac{e}{e} \frac{e}{s^2} \right) - \left( \frac{-1}{s^2} \right) \right] + \frac{1}{s^2} \left[ \left( \frac{e}{s^2} \right) - \left( -a \frac{e}{s} + \frac{e}{s^2} \right) \right] \right\}$$

$$= \frac{1}{1 - e^{2as}} \left[ \frac{-ae^{-as}}{s} - \frac{-as}{s^2} + \frac{1}{s^2} + \frac{e^{-as}}{s^2} + \frac{ae^{-as}}{s} \right]$$

$$= \frac{1}{1 - e^{2as}} \left[ \frac{1 + e^{-as}}{s^2} - \frac{e^{-as}}{s^2} + \frac{1}{s^2} + \frac{e^{-as}}{s^2} + \frac{1}{s^2} + \frac{e^{-as}}{s^2} \right]$$

$$= \frac{1}{1 - e^{-as}} \left[ \frac{1 + e^{-as}}{s^2} - \frac{e^{-as}}{s^2} + \frac{1}{s^2} +$$