**Fourier Series**

If a function is periodic,



Then the function can be written as



K=1 is the fundamental frequency. All the other frequencies are the harmonics of this fundamental frequency.

Joseph Fourier suggested that we can write this function as a sum of sine and cosine harmonics



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Derivation included in the derivation notes

Alternative forms:

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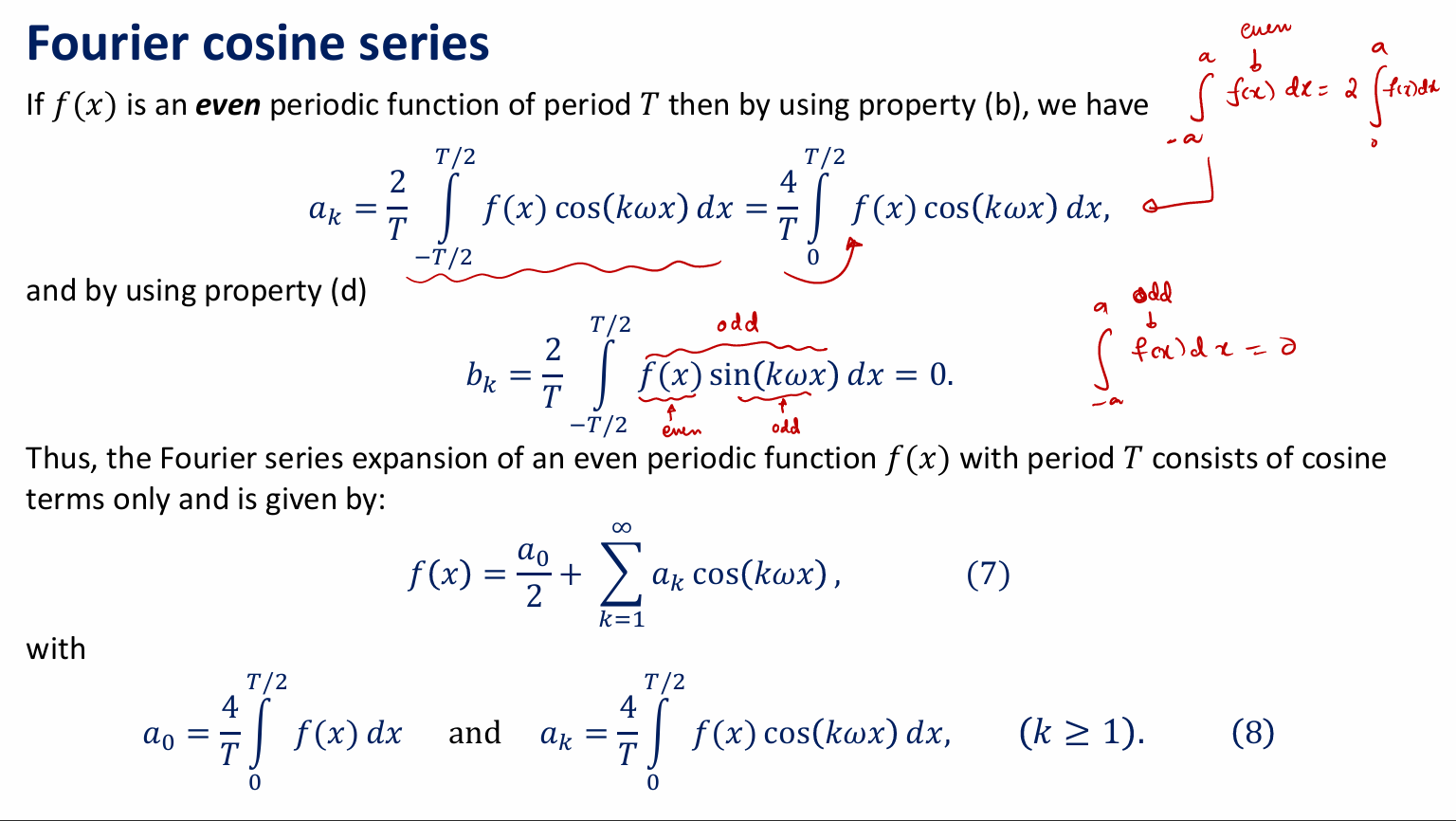
**Even & Odd Functions**

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**Conditions for existence and convergence of fourier series**

**A close-up of a math problem

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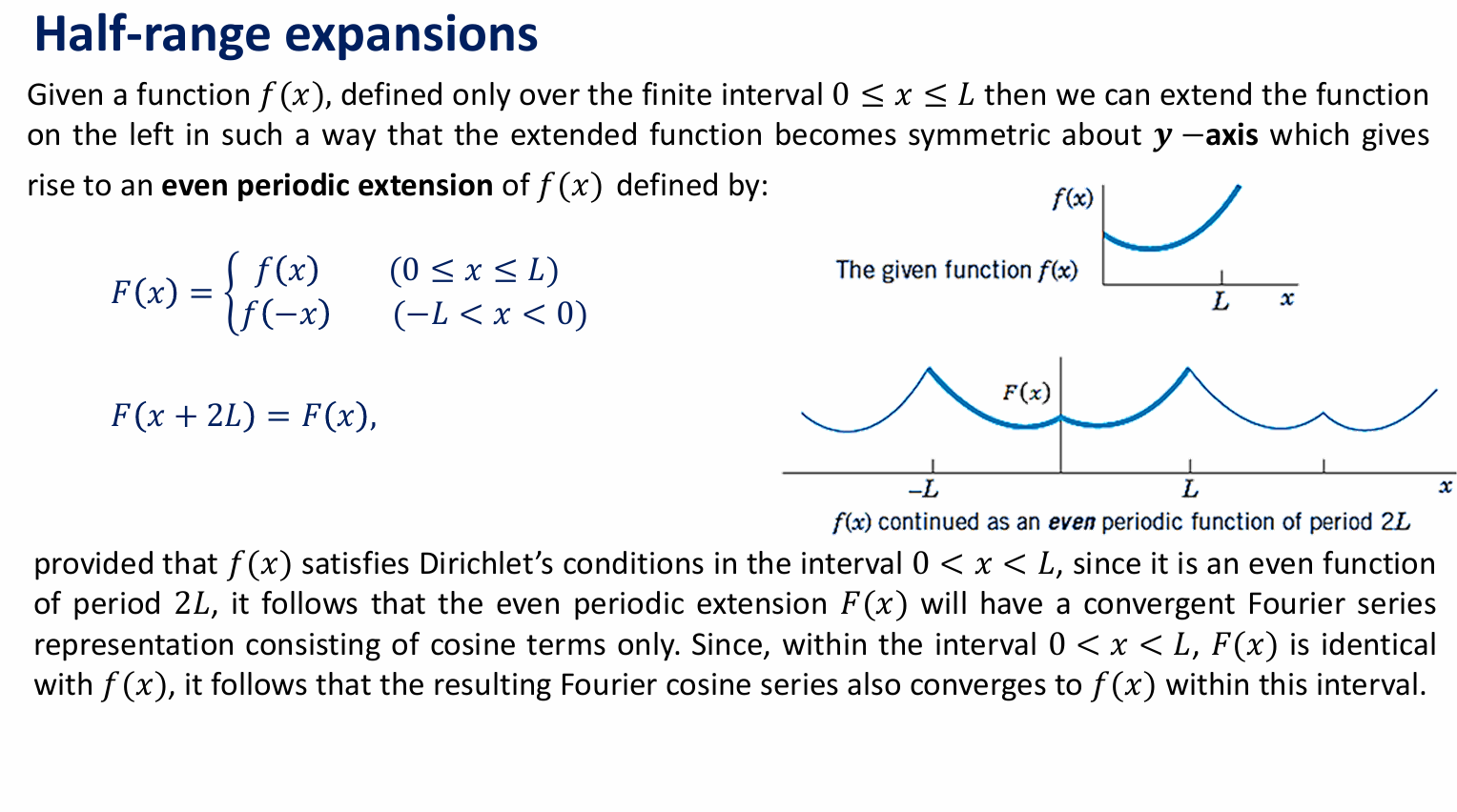
**How can we find the transform of non-periodic functions?**

1. **Half range expression**
2. **Fourier Transforms**

**Half Range Expansion**

**Even Expansion**

**Odd Expansion**

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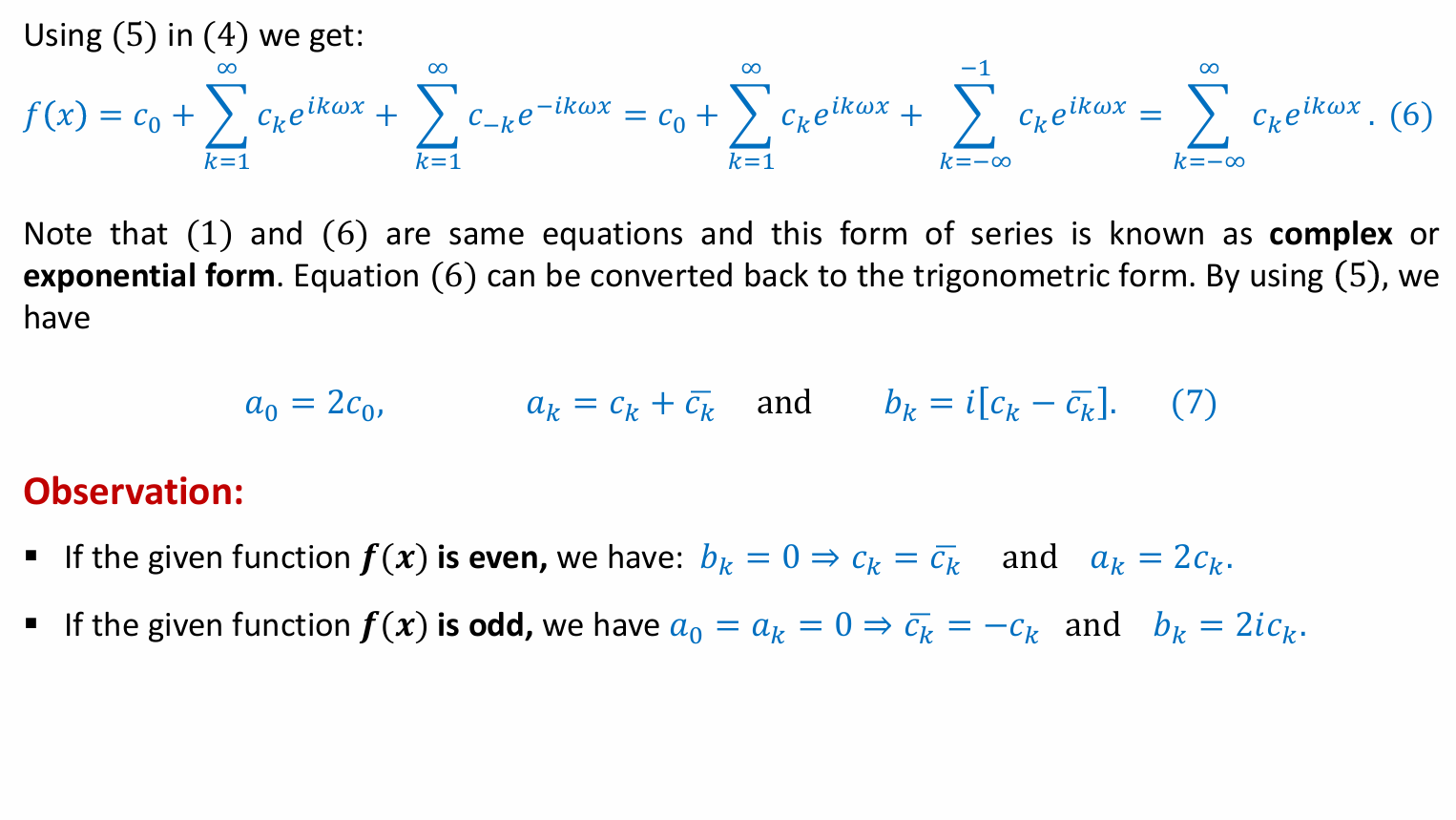
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Complex Fourier Series



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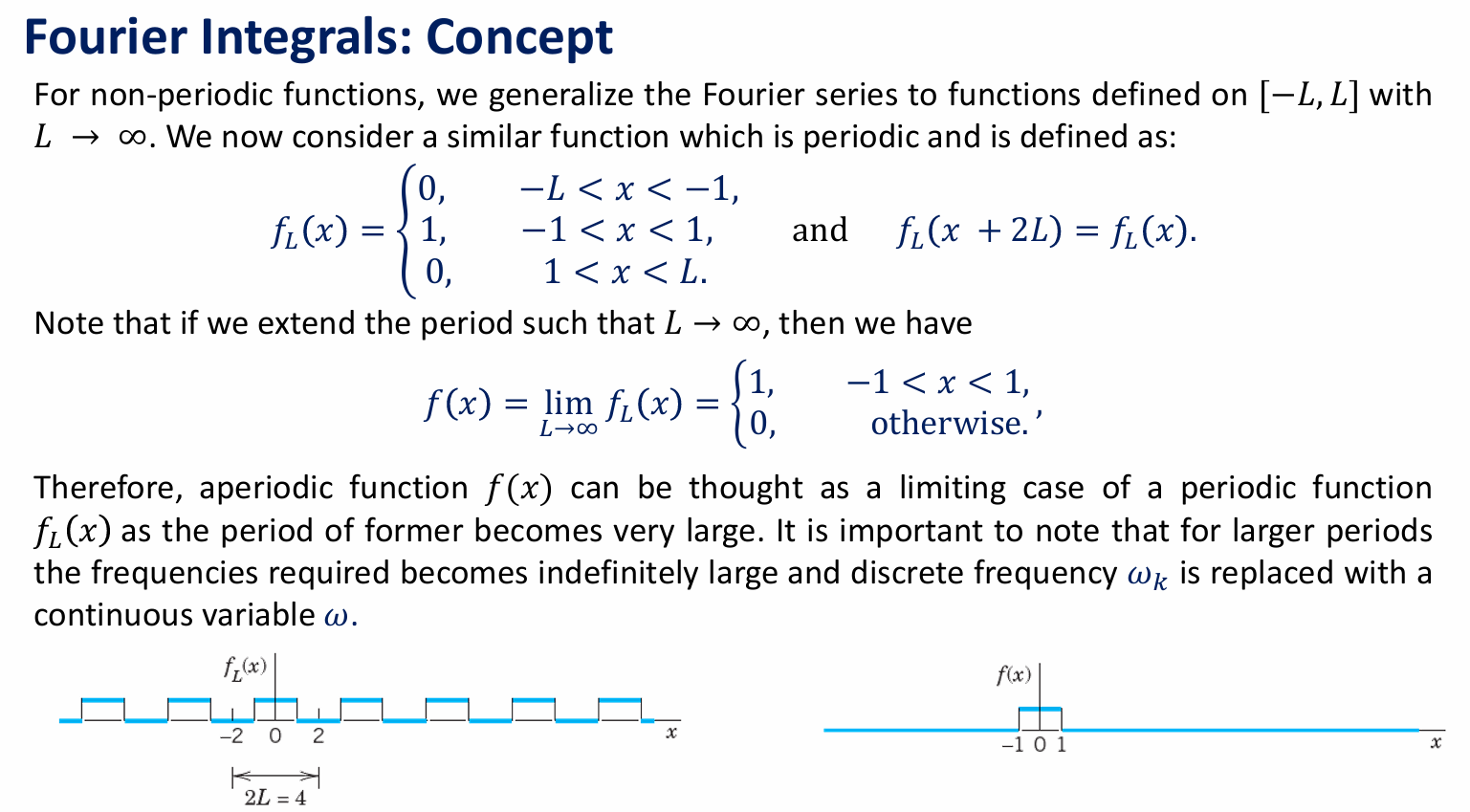
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Fourier Integrals



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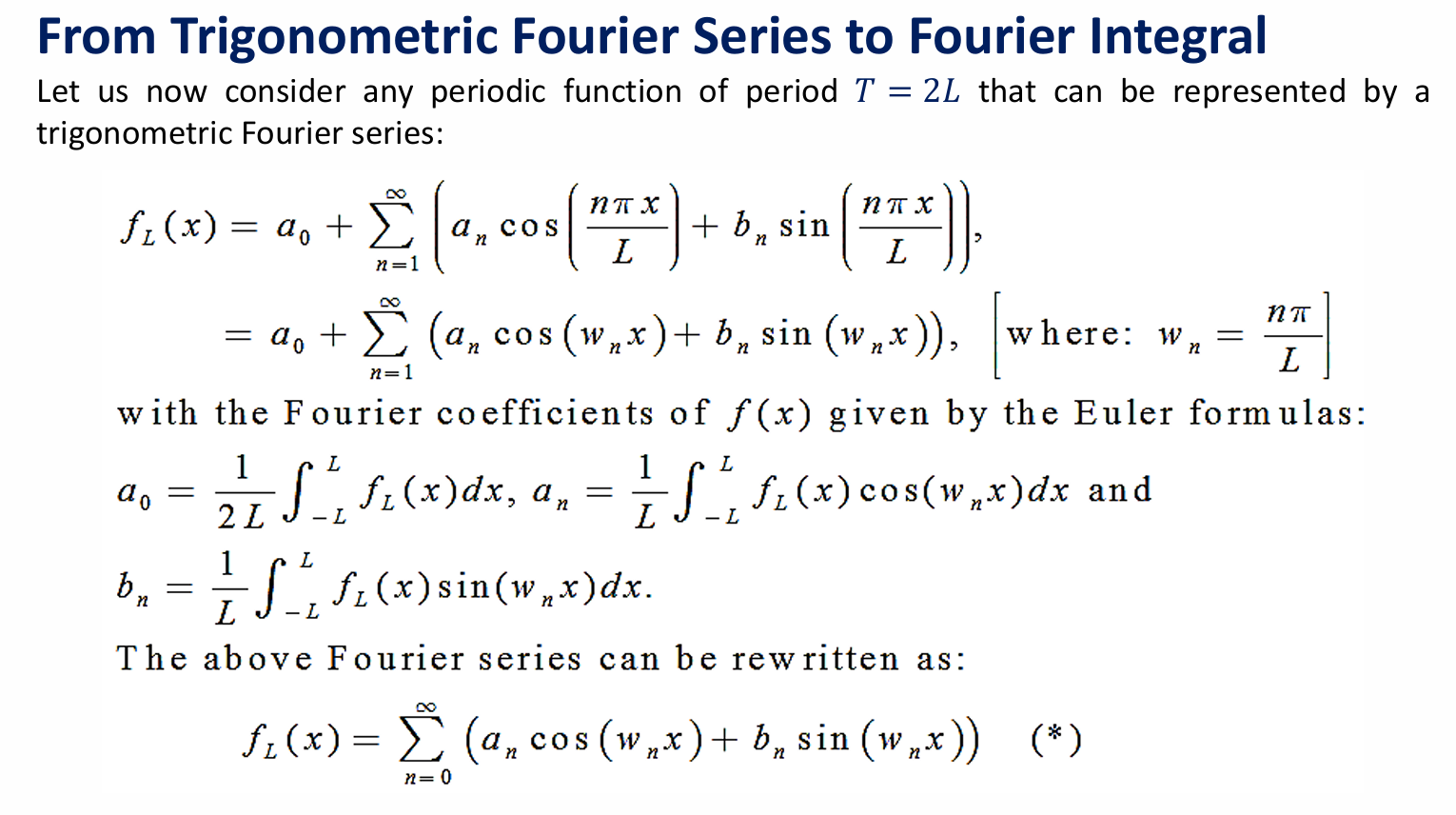
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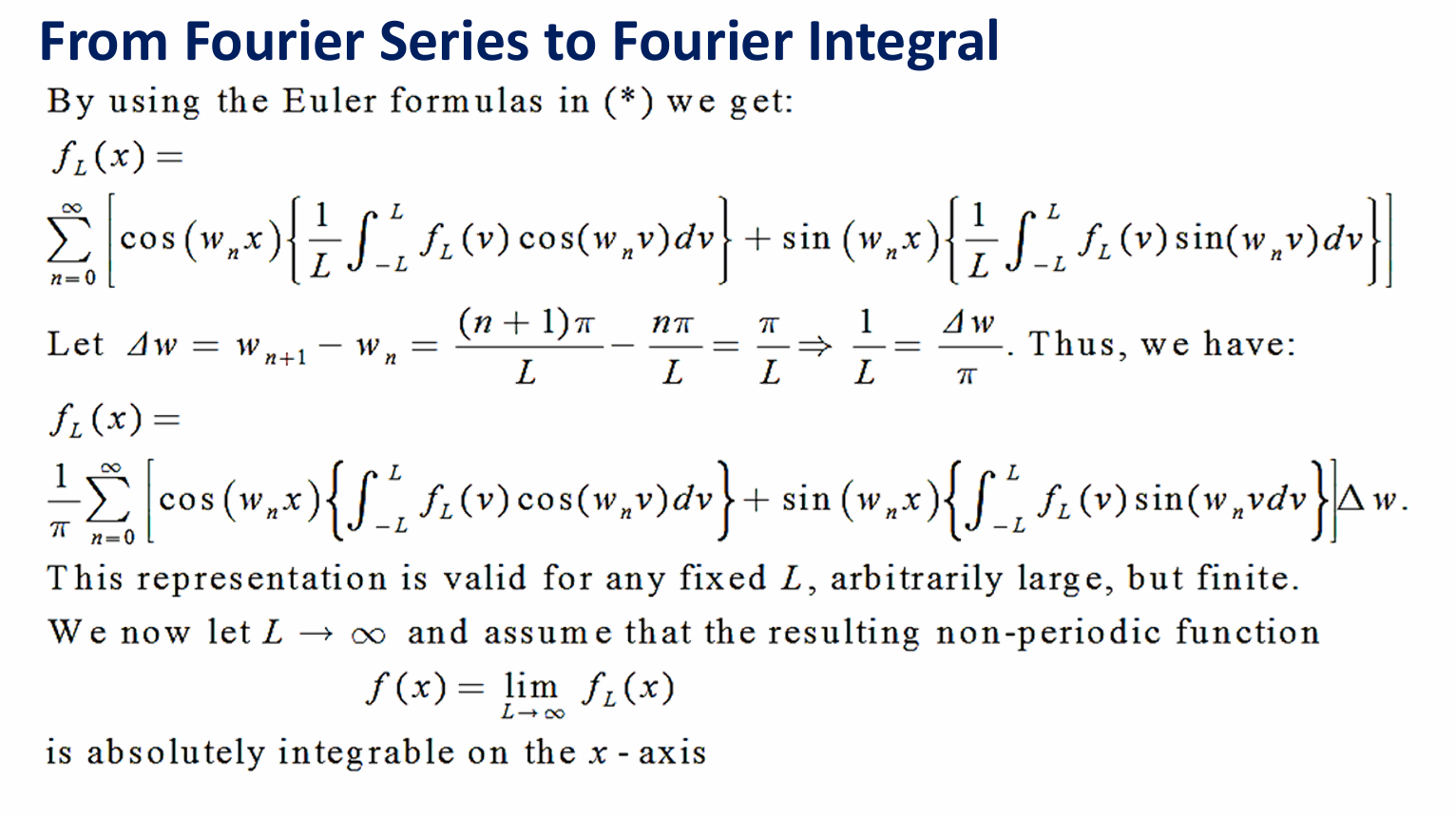
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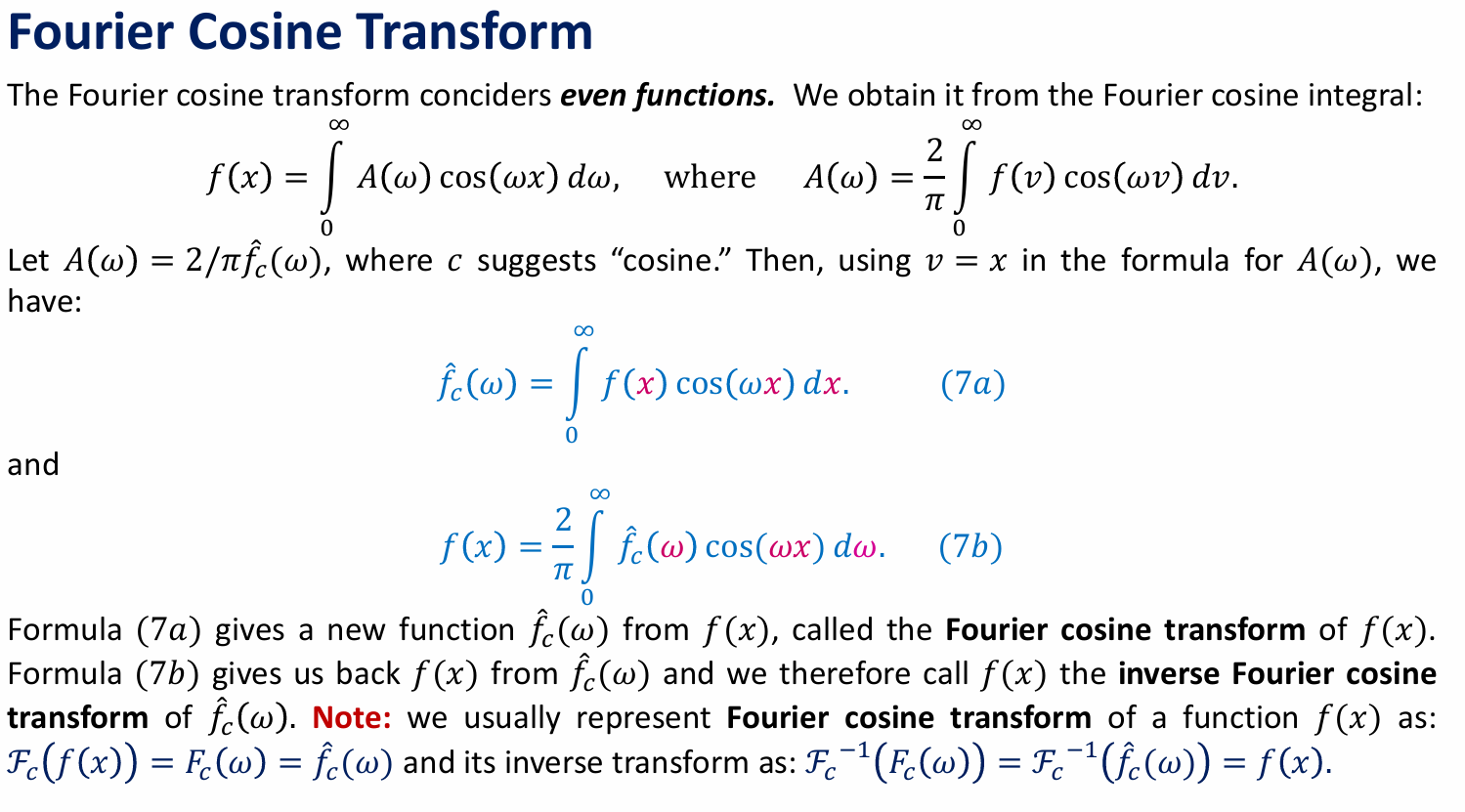
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Fourier Transform



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