

# task\_abh4vhlgczdbni37\_with\_calculation

## Student Group

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## signal analysis, RMS, exam ee2 SS2021

**Exercise E1 Signal Analysis****(written test, approx. 6 % of a 120-minute written test, SS2021)**

A) Determine the effective value of the periodic signal  $i(t) = 50 \cos(6000t + 4)$  (independent quantities are available in the consumer arrow system. (hard)

$$i(t) = 50 \sqrt{2} \cos(6000t + 4)$$

$$i(t) = 30 \sqrt{2} \sin(6000t + 5)$$

Path

b) Determine the complex impedance  $Z$  for a resistive-inductive load (= $R$ - $L$ )

$$Z = \sqrt{R^2 + (2\pi f L)^2}$$

The complex impedance  $Z$  for a resistive-inductive load (= $R$ - $L$ )

Path

$$Z = R + j\omega L = R + j2\pi f L$$

The Pythagorean theorem can derive the absolute value:  $|Z| = \sqrt{R^2 + (2\pi f L)^2}$

The complex impedance  $Z$  for a resistive-inductive load (= $R$ - $L$ )

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