3. F3.

3 (a)

1/1 point (graded)

Let $f(t) = \sum_{n=1}^{\infty} \frac{1}{n} \cos(nt)$.

Find $\int_0^{\pi} f(t) \cos(3t)\ dt$.

(Enter as an expression or a number accurate to 2 decimal places.)

pi/6 ✔

$\frac{\pi}{6}$

FORMULA INPUT HELP

Submit You have used 1 of 3 attempts

✔ Correct (1/1 point)

3 (b)

1/1 point (graded)
Consider the differential equation

$$\ddot{x} + 0.01\dot{x} + 100x = f(t),$$

where $f(t)$ is defined in 3(a).

What is the angular frequency of the term in the Fourier series of the response $x(t)$ with largest amplitude?

(Enter as an expression or a number accurate to 2 decimal places.)

10 ✔

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Submit You have used 1 of 3 attempts

✔ Correct (1/1 point)

3 (c)

1/1 point (graded)
What is the amplitude of the term in the Fourier series of the response from part 3(b)?

(Enter as an expression or a number accurate to 2 decimal places.)

1 ✔

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✔ Correct (1/1 point)