Question 1

1 pts

$\mathbb{E}(a_p)$ for $p = 1, \ldots, N/2 - 1$ is

- ◯ $2/N$
- ◯ 1
- ◯ 0

Question 2

1 pts

$\mathrm{Var}(a_p)$ for $p = 1, \ldots, N/2 - 1$ is

- ◯ $\frac{2\sigma^2}{N}$
- ◯ $\frac{4\sigma^2}{N}$
- ◯ $\frac{4\sigma^2}{N^2}$

Question 3

1 pts

$\mathbb{E}(\mathrm{I}(\omega_p))$ for $p = 1, \ldots, N/2 - 1$ is

- 0
- $\frac{N\sigma^2}{4\pi}$
- $\frac{\sigma^2}{\pi}$

Question 4

1 pts

$\mathrm{Var}(\mathrm{I}(\omega_p))$ for $p = 1, \ldots, N/2 - 1$ is

- $\frac{\sigma^4}{4\pi}$
- $\frac{\sigma^4}{\pi^2}$
- $\frac{\sigma^2}{\pi}$

Question 5

1 pts

Based on the results obtained in Problem 5 on the worksheet, we conclude that here the periodogram is

- an unbiased and consistent estimator of the spectrum
- unbiased but not a consistent estimator of the spectrum
- biased but a consistent estimator of the spectrum
- biased and not a consistent estimator of the spectrum

Question 6

1 pts

As N grows large, the distribution of $2\pi \mathrm{I}(\omega_p)/\sigma^2$

- remains unchanged
- becomes more heavy-tailed
- becomes more light-tailed