Unit 10 - Week 8

Week 8 Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-25, 23:59 IST.

1) The parameters of a series RLC circuit are as follows: *1 point*

$R = 5\ \Omega$, $C = 3.28\ \mu F$ and $L = 48.3925$ mH.

The circuit is excited by a voltage source $V_s(t) = 10 \sin(2510t)$ volts. Find i(t) (in A) in the circuit.

a. 2 cos(2510t)
b. -2 cos(2510t)
c. 2 sin(2510t)
d. -2 sin(2510t)

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

2) The crest factor (or peak factor) of a sinusoidal wave is: *1 point*

a. 1.414
b. 1.11
c. 2.0
d. 1.5

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

3) The r.m.s value of the resultant current (in A) in a wire which carries a DC current of 8 A and a sinusoidal alternating current of peak value 8.485A is approximately *1 point*

a. 8.25
b. 9.50
c. 10.4
d. 10.0

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

4) In a series RLC circuit, R=5 ohms, X_L=20 ohms, X_c= 25 ohms at 50Hz frequency. If the circuit is connected to a voltage source $V(t) = 100 \sin(314t + 30^0)$ Volts, the rms value of the current (in A) will be approximately equal to *1 point*

a. 3.33
b. 5
c. 10
d. 14.14

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

5) *1 point*

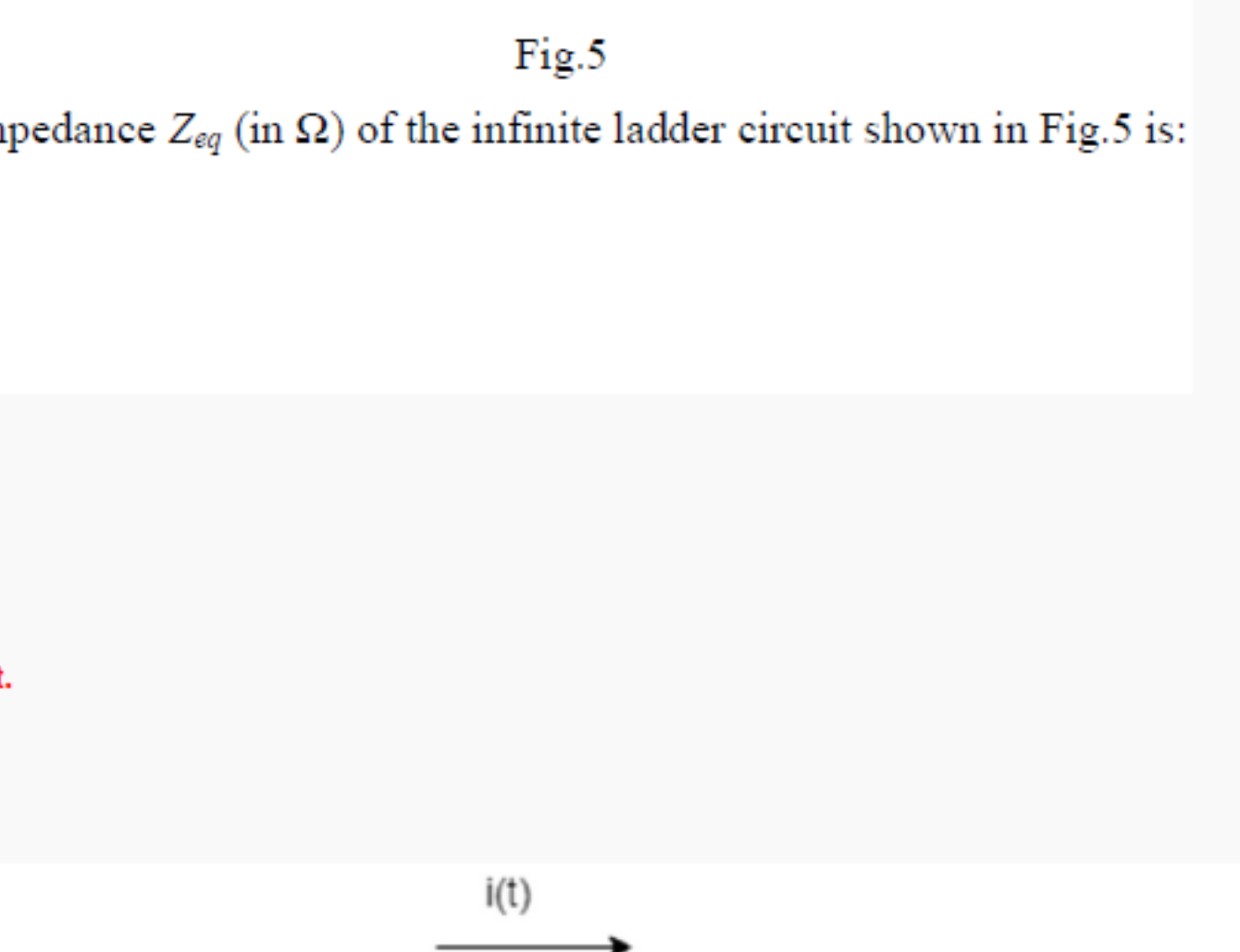

Fig.5

The equivalent impedance Z_{eq} (in Ω) of the infinite ladder circuit shown in Fig.5 is:

a. –j12
b. j12
c. j13
d. –j13

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

6) *1 point*

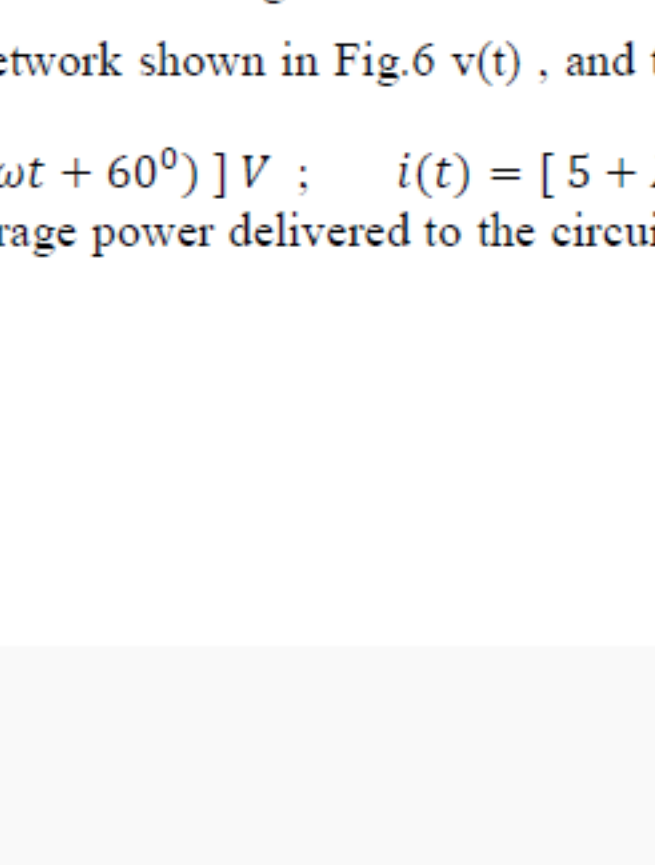

Fig.6

The voltage across an electrical network shown in Fig.6 v(t) , and the current i(t) through it are expressed as follows:

$V(t) = [\,5 - 10\cos(\omega t + 60^0)\,]\ V$; $i(t) = [\,5 + X\cos(\omega t)]\ A$.

Where $\omega = 150\pi$ rad /s. If the average power delivered to the circuit is zero, find the value of X (in A)

a. 0
b. 5
c. 5.77
d. 10

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

7) *1 point*

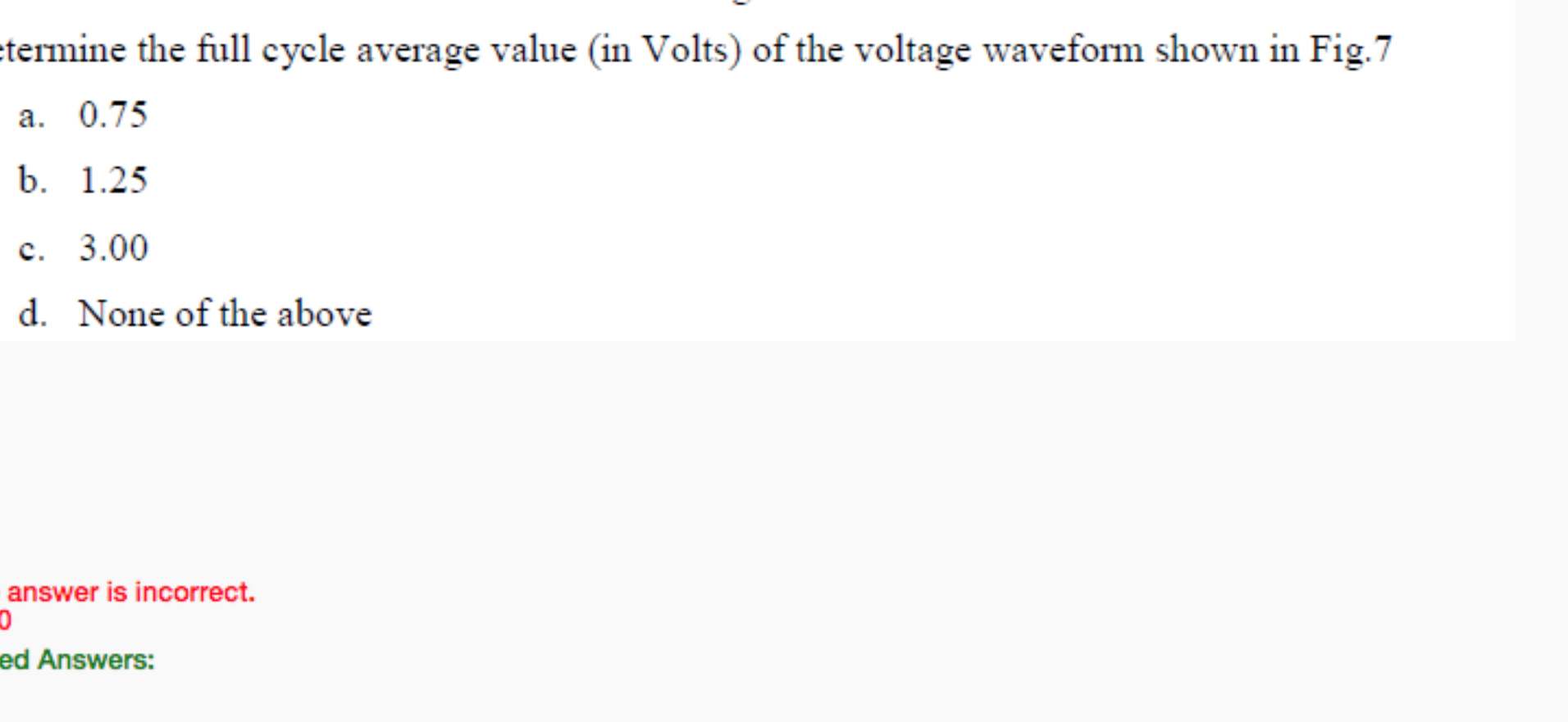

Fig.7

Determine the full cycle average value (in Volts) of the voltage waveform shown in Fig.7

a. 0.75
b. 1.25
c. 3.00
d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

8) *1 point*

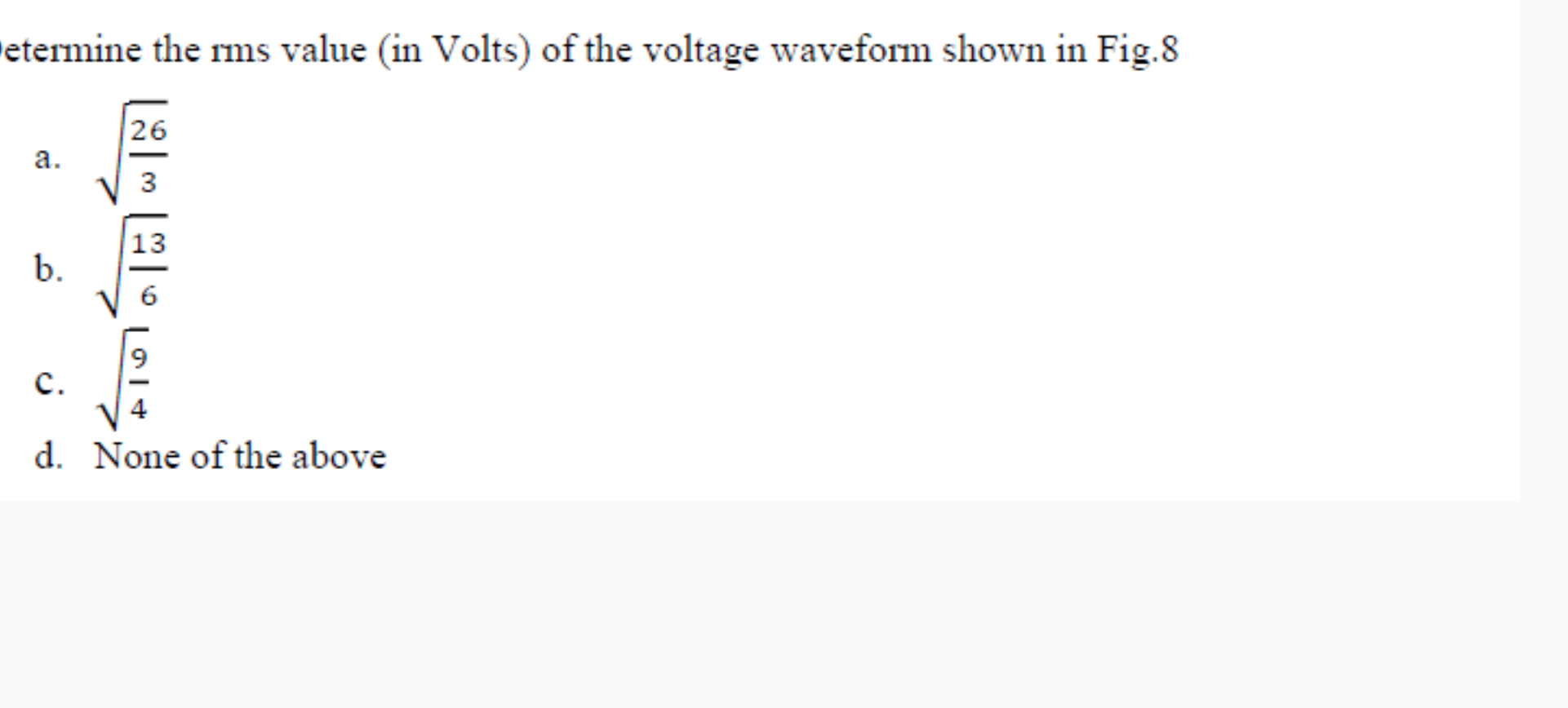

Fig.8

Determine the rms value (in Volts) of the voltage waveform shown in Fig.8

a. $\sqrt{\frac{26}{3}}$
b. $\sqrt{\frac{13}{6}}$
c. $\sqrt{\frac{9}{4}}$
d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

9) *1 point*

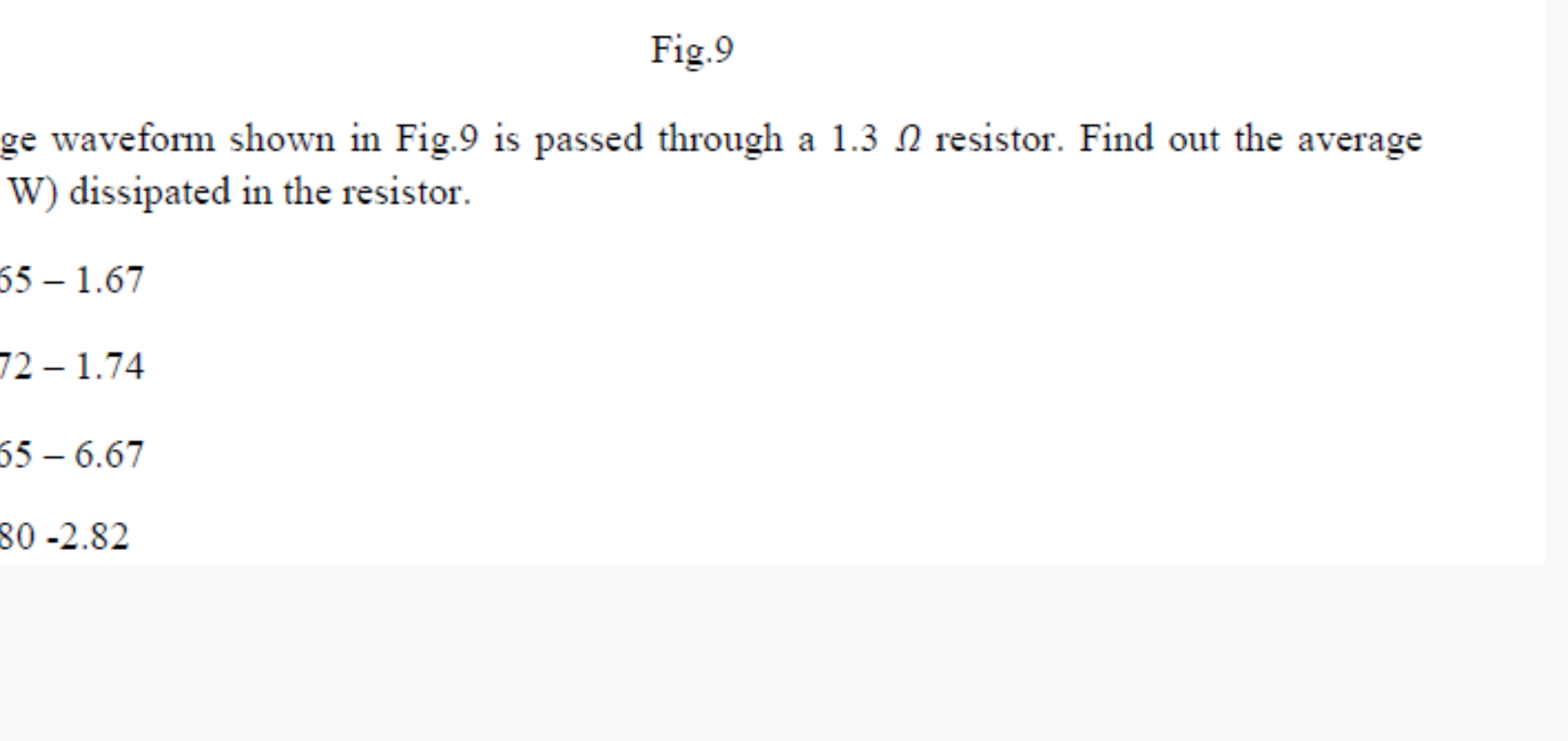

Fig.9

The voltage waveform shown in Fig.9 is passed through a 1.3 Ω resistor. Find out the average power (in W) dissipated in the resistor.

a. 1.65 – 1.67
b. 1.72 – 1.74
c. 6.65 – 6.67
d. 2.80 -2.82

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

10) An LCR series circuit with R =100 Ω is connected to a 200 V, 50 Hz a.c source. When only the capacitor is removed, the voltage leads the current by 60^0. When only the inductor is removed, the current leads the voltage by 60^0. The current (in A) in the circuit when all three elements are connected in series is: *1 point*

a. $\frac{2}{\sqrt{3}}$
b. $\frac{\sqrt{3}}{2}$
c. 1.0
d. 2.0

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

11) *1 point*

Fig.11

In the circuit shown in Fig.11, V_s (t) = cos (2.5t) Volts, Z = (2+j2) ohms, C is so chosen that the current i(t) is in phase with the supply voltage V_s(t). Find the value of the capacitor C (in F).

a. 1.00
b. 0.10
c. 10.0
d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

12) *1 point*

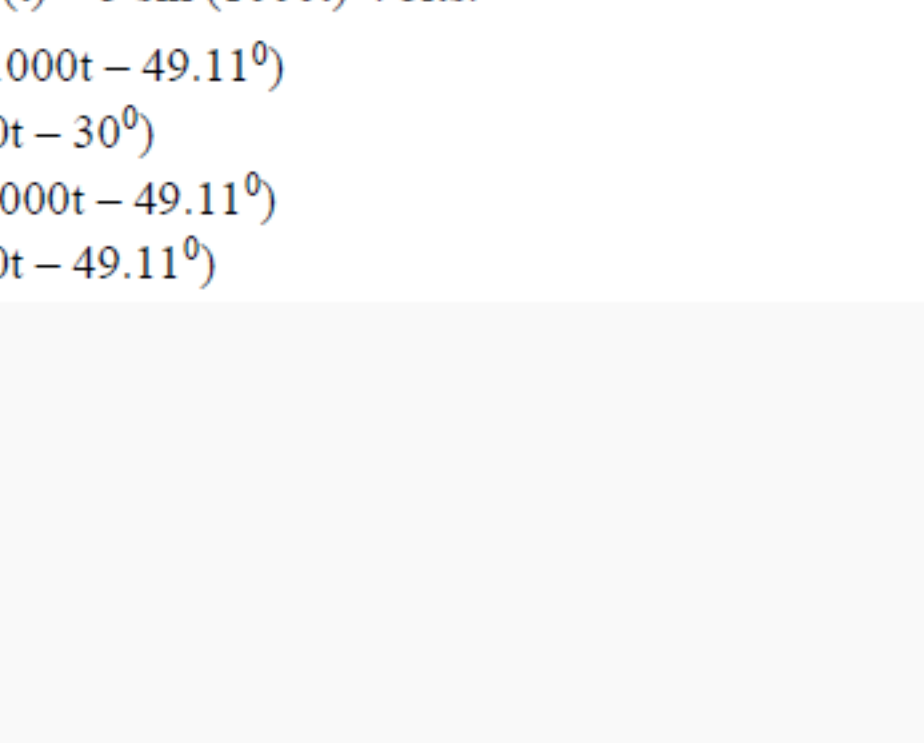

Fig.12

In the linear circuit shown in Fig.12, when v(t) = 5 cos (500t) Volts, i(t) = 0.4 cos $(500t - 30^0)$ A.
Calculate i(t) (in A) when v(t) = 5 sin (1000t) Volts.

a. $0.3024 \cos(1000t - 49.11^0)$
b. $0.4 \sin(1000t - 30^0)$
c. $0.3024 \sin(1000t - 49.11^0)$
d. $0.4 \sin(1000t - 49.11^0)$

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.