

# ECE 3600 Homework # 3A

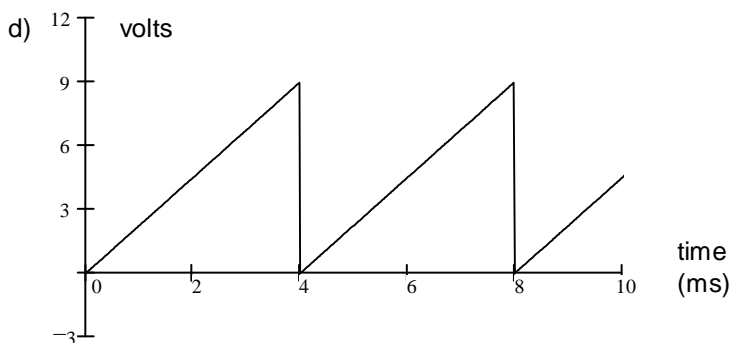
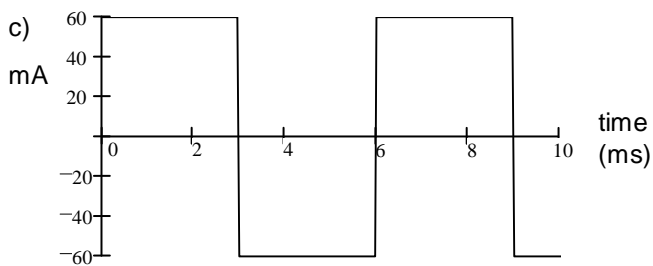
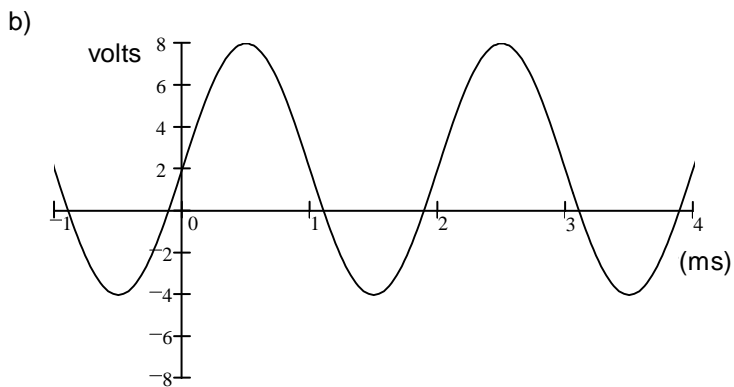
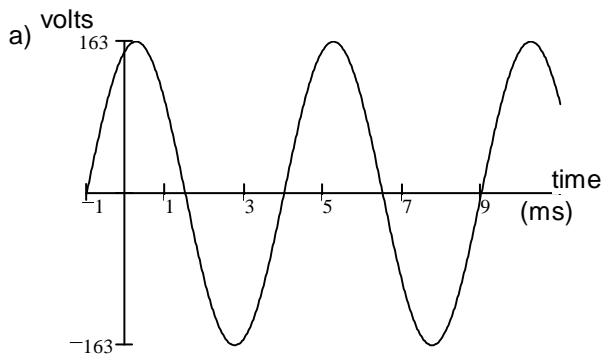
Due: Mon, 1/22/24

d

1. For each of the following waveforms, find:

1) Average DC ( $V_{DC}$ , or  $I_{DC}$ ) value

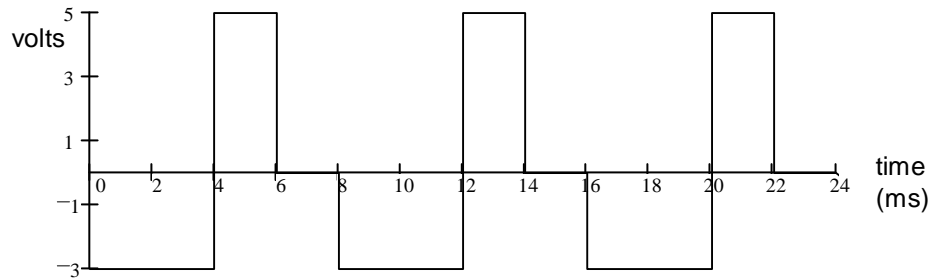
2) RMS (effective) value



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2. For waveform shown, find:

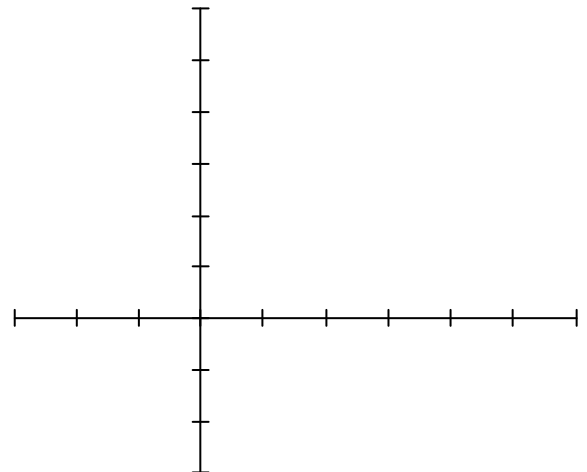
- a) Rectified average ( $V_{RA}$ ) value
- b) RMS (effective) value



3. Compute the power factor for an inductive load consisting of  $L := 20 \cdot \text{mH}$  and  $R := 6 \cdot \Omega$  in series.  $\omega := 377 \frac{\text{rad}}{\text{s}}$

4. The complex power consumed by a load is  $620 \angle 29^\circ \text{ VA}$ . Find:

- a) Apparent power (as always, give the correct units).
- b) Real power.
- c) Reactive power.
- d) Power factor.
- e) Is the power factor leading or lagging?
- f) Draw a phasor diagram.



**Answers**

- 1. a) 0·V    115·V    b) 2·V    4.69·V
- c) 0·mA    60·mA    d) 4.5·V    5.2·V
- 2. a) 2.75·V    b) 3.28·V
- 3. pf := 0.623

- 4. a) 620·VA    b) 542·W    c) 301·VAR
- d) 0.875    e) lagging

