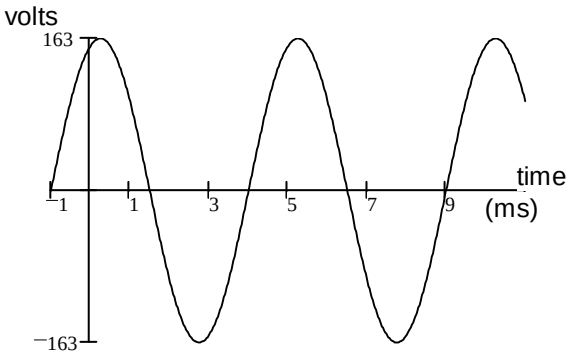
ECE 3600 Homework # 3A

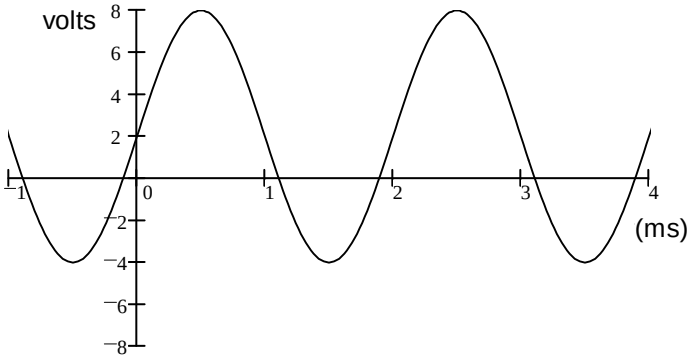
d

1. For each of the following waveforms, find:
   1) Average DC (V_{DC}, or I_{DC}) value
   2) RMS (effective) value

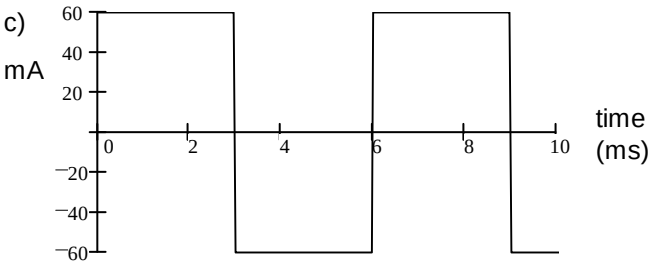
a)



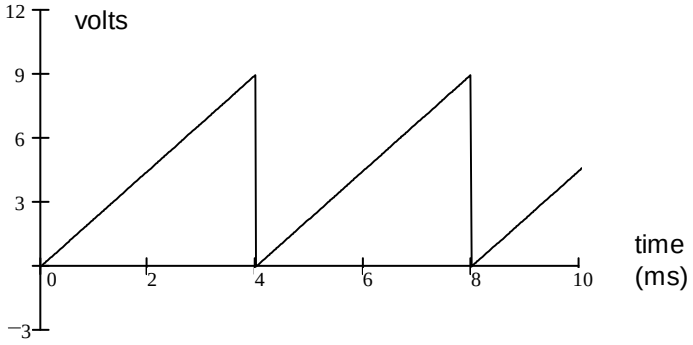
b)



c)

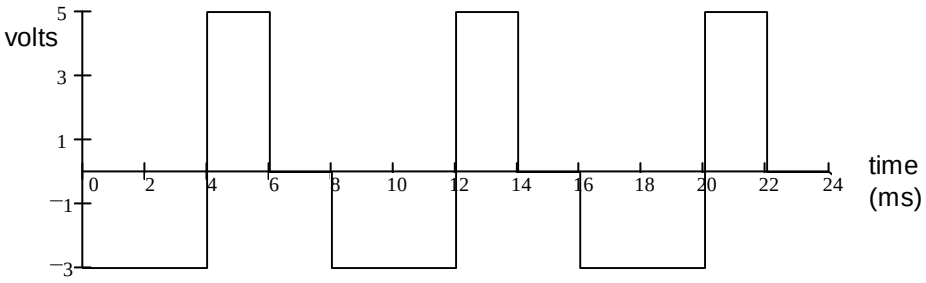


d)



ECE 3600 Hw 3A p2

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 $L := 20 \cdot mH$ and $R := 6 \cdot \Omega$ in series. $\omega := 377 \cdot \frac{rad}{s}$

4. The complex power consumed by a load is $620 \angle 29^{o}$ VA. Find:
   a) Apparent power (as always, give the correct units).

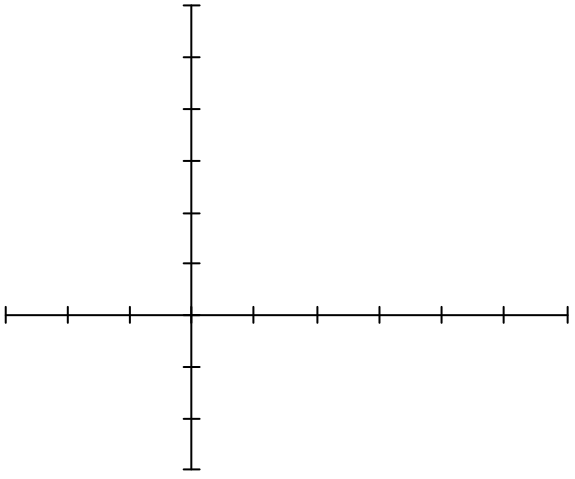
   b) Real power.

   c) Reactive power.

   d) Power factor.

   e) Is the power factor leading or lagging?

   f) Draw a phasor diagram.



Answers

1. a) $0 \cdot V$ $115 \cdot V$ b) $2 \cdot V$ $4.69 \cdot V$
   c) $0 \cdot mA$ $60 \cdot mA$ d) $4.5 \cdot V$ $5.2 \cdot V$
2. a) $2.75 \cdot V$ b) $3.28 \cdot V$
3. $pf := 0.623$
4. a) $620 \cdot VA$ b) $542 \cdot W$ c) $301 \cdot VAR$
   d) 0.875 e) lagging f)