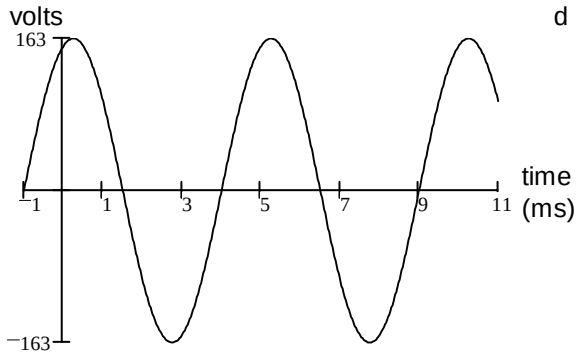
ECE 3600 Homework # 3A

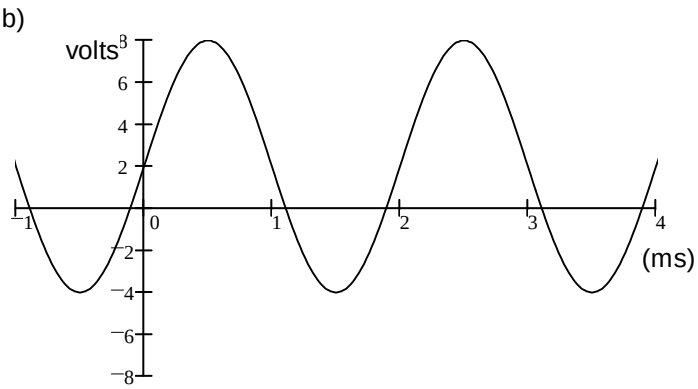
1. For each of the following waveforms, find:
   1) Average DC (V_{DC}, or I_{DC}) value
   2) RMS (effective) value

1a)

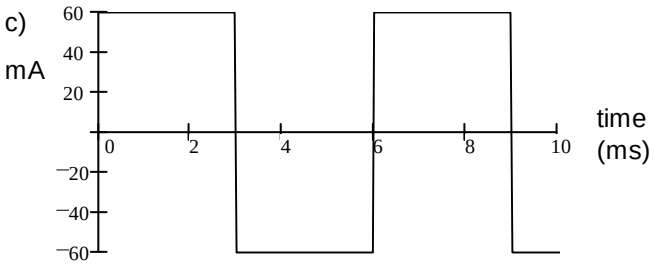


d

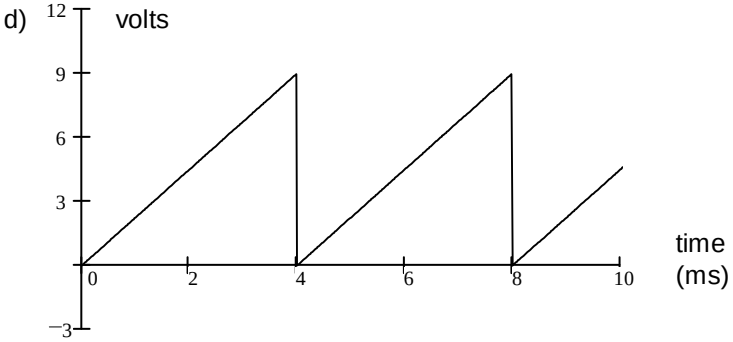
b)



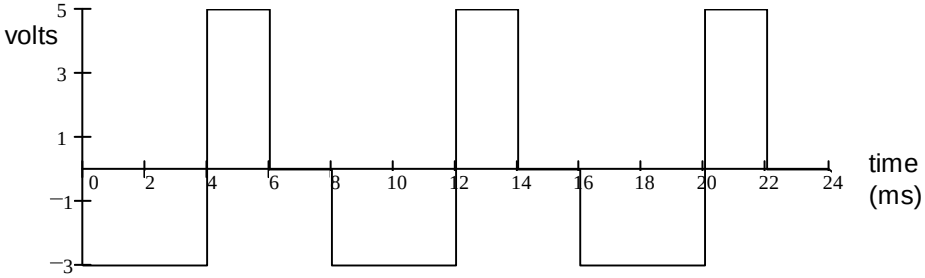
c)



d)



2. For waveform shown, find:
   a) Rectified average (V_{RA}) value
   b) RMS (effective) value

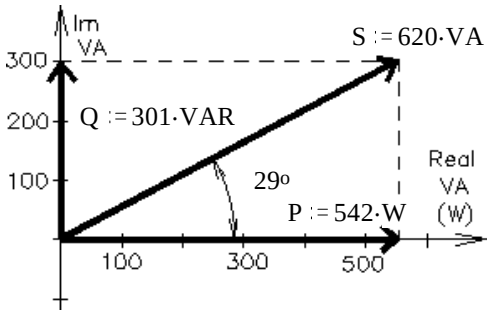


3. Compute the power factor for an inductive load consisting of $L := 20 \cdot mH$ and $R := 6 \cdot \Omega$ in series. $\omega := 377 \cdot \frac{rad}{s}$

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) ------->



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