Lab 2 EEL 3212 C §01 Peter A. Dranishnikov

1. $(6+;10)+(8-;2)=(14+;8)$

2. $(2+;5)-(10-;4)=(-8+;9)$

3. $10\angle 0^\circ + 20\angle 90^\circ$

$= 10+;0+0+;20$

$= 10+;20 = 22.36\angle 63.43^\circ$

4. $10\angle 45^\circ + 2\angle -30^\circ$

$= 10\cos(45)+;10\sin(45)+2\cdot\cos(-30)$
$+;2\sin(-30)$

$= 8.803+;6.07 = 10.69\angle 34.6^\circ$

5. $20\angle 10 - 5\angle 75$

$= (20\cos 10+;20\sin 20)-(5\cos 75+;5\sin 75)$

$= 18.402-;1.356 = 18.452\angle -4.216^\circ$

6. $(10+;20)*(5+;5) = (10\cdot 5-20\cdot 5)+;(10\cdot 5+20\cdot 5)$

$= -50+;150$

7. $\frac{(2+;10)}{(0.5+;2)} = \frac{(2\cdot 0.5+10\cdot 2)+;(10\cdot 0.5-2\cdot 2)}{0.5^2+2^2}$

$= \frac{21+;}{4.25} = 4.94+;0.235$

formulas:

$(x+;y)(u+;v) =$
$(xu-yv)+;(xv+yu)$

$\frac{a+;b}{c+;d} = \frac{(ac+bd)+;(bc-ad)}{c^2+d^2}$

$A\angle\theta = x+;y$

$x = A\cos\theta \quad y = A\sin\theta$

$A = \sqrt{x^2+y^2}$

$\theta = \tan^{-1}\frac{y}{x}$

8. $10\angle 0^\circ \cdot 10\angle 90^\circ = 100\angle 90^\circ = (10 \cdot 10 \angle (0^\circ + 90^\circ)$

9. $10\angle 45^\circ \cdot 10\angle -45^\circ = 100\angle 0^\circ$

10. $\frac{10\angle 90^\circ}{5\angle 10^\circ} = 2\angle 80^\circ$

11. $\frac{10\angle 90^\circ}{40\angle -40^\circ} = \frac{1}{4}\angle 130^\circ$

12. $\frac{1\angle 0^\circ}{200\angle 90^\circ} = \frac{1}{200}\angle -90^\circ$

13-15 on graph paper

16. $v(t) = \underline{10}\sin(2\pi \cdot \underline{20} \cdot t)$

17. $5\ V_{p-p} \rightarrow 2.5$ amplitude

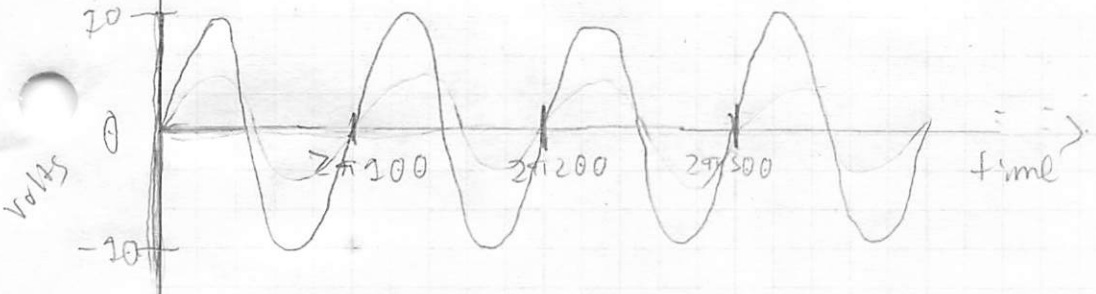
$v(t) = 2.5\sin(2\pi \cdot 100 \cdot t) - 1$

18. $A = \sqrt{2} \cdot V_{rms} = \sqrt{2} \cdot 10$

$v(t) = \sqrt{2} \cdot 10\sin(2\pi \cdot 1000 \cdot t - \frac{40\pi}{180})$

19. $v(t) = 20\sin(2\pi \cdot 10^4 \cdot t + \frac{20\pi}{180}) + 5$

13 $v(t) = 20 \sin(2\pi 100t)$



14 $v(t) = 20 \sin(2\pi 1000t + 45^0)$ $\quad 45^0 = \frac{\pi}{4}$

25. $v(t) = 5 + 6 \sin 2\pi 100t$