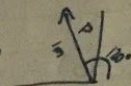


Ben Pidenbar

4-3  $P_x = 1 \cos(120^\circ) = -.5$
 $P_y = 1 \sin(120^\circ) = .866$
 $\therefore P = -.5i + .866j$
 $|P| = \sqrt{(-.5)^2 + (.866)^2} = 1$
 $\theta = \tan^{-1}(.866 / -.5) = -60^\circ$
 $\therefore P = 1 \angle -60^\circ$

4-12 $P = -1i - 2j$
 $|P| = \sqrt{(-1)^2 + (-2)^2} = \sqrt{5}$
 $\theta = \tan^{-1}(\frac{-2}{-1}) = 63.43^\circ$
 $P = \sqrt{5} \angle 63.43^\circ$

4-17. $V = \sqrt{(20)^2 + (5)^2} = (20.62 \text{ V})$

4-24a. $V_{swx} = 30 \cos(-150^\circ) = -25.98$
 $V_{swy} = 30 \sin(-150^\circ) = -15$
 $V_{wx} = 10 \cos(135^\circ) = -7.07$
 $V_{wy} = 10 \sin(135^\circ) = 7.07$
 $V_s = -25.98j - 15j - 7.07i + 7.07j = -33.05i - 7.93j$

b. $|V_s| = \sqrt{(33.05)^2 + (7.93)^2} = 33.99$
 $\tan^{-1}(-7.93 / -33.05) = 13.49^\circ$
 $V_s = 33.99 \angle 13.49^\circ$

c. $\frac{\sin(-150^\circ)}{30} = \frac{\sin(\theta)}{V_s}$

4-28 a. $P_{1x} = 21.21 \cos(-45^\circ) = 15$
 $P_{1y} = 21.21 \sin(-45^\circ) = -15$
 $P_{2x} = 14.14 \cos(-135^\circ) = -10$
 $P_{2y} = 14.14 \sin(-135^\circ) = -10$ } Rounded

$P = 15i - 15j - 10i - 10j = 5i - 25j$

b. $|P| = \sqrt{(5)^2 + (25)^2} = 25.5$
 $\theta = \tan^{-1}(-25/5) = -78.69^\circ$
 $P = 25.5 \angle -78.69^\circ$

c. $\frac{\sin(150^\circ)}{30} = \frac{\sin(\theta)}{V_s}$

4-35 a. $\theta = \tan^{-1}(8.66/15) = 30^\circ$

b. ~~4900~~ $W = 4900$

~~4900~~ $W_x = -4900 \cos(30) = -4243.52$

$W_y = -4900(\sin 30) = -2450$

$F_x + N_x - 4243.52i - 2456j = 0$

$F - 4243.52i + N - 2456j = 0$

c. $F - 4243.52 = 0$ $N - 2456 = 0$

$F = 4243.52 \text{ N}$ $N = 2456 \text{ N}$