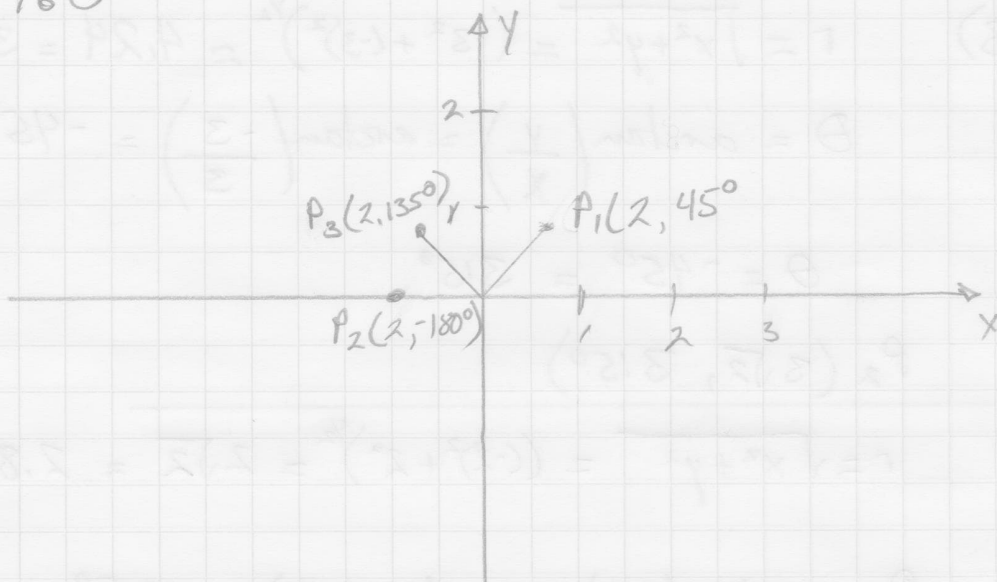


P. 160

1.



$$2. P_1(2, 45^\circ) \quad x = 2 \cos 45^\circ = 1.41$$

$$y = 2 \sin 45^\circ = 1.41$$

$$P_1(1.41, 1.41)$$

$$P_2(2, -180^\circ) \quad x = 2 \cos(-180^\circ) = -2.0$$

$$y = 2 \sin(-180^\circ) = 0$$

$$P_2(-2.0, 0)$$

$$P_3(2, 135^\circ) \quad x = 2 \cos(135^\circ) = -1.41$$

$$y = 2 \sin(135^\circ) = 1.41$$

$$P_3(-1.41, 1.41)$$

$$3. P_1(2, 1) \quad r = \sqrt{x^2 + y^2} = (2^2 + 1^2)^{1/2} = \sqrt{5} = 2.2$$

$$\theta = \tan^{-1}\left(\frac{y}{x}\right) = \tan^{-1}\left(\frac{1}{2}\right) = 26.6^\circ$$

$$P_1(\sqrt{5}, 26.5^\circ)$$

3. (continued)

$$P_2(3, -3) \quad r = \sqrt{x^2 + y^2} = (3^2 + (-3)^2)^{1/2} = 4.24 = 3\sqrt{2}$$

$$\theta = \arctan\left(\frac{y}{x}\right) = \arctan\left(\frac{-3}{3}\right) = -45^\circ$$

$$\theta = -45^\circ = 315^\circ$$

$$P_2(3\sqrt{2}, 315^\circ)$$

$$P_3(-2, 2) \quad r = \sqrt{x^2 + y^2} = ((-2)^2 + 2^2)^{1/2} = 2\sqrt{2} = 2.83$$

$$\theta = \arctan\left(\frac{y}{x}\right) = \arctan\left(\frac{2}{-2}\right) = 135^\circ$$

$$P_3(2\sqrt{2}, 135^\circ)$$

Careful: If your calculator gives -45° you need to correct the angle to be in 2nd quadrant

(-, +)	(+, +)
(-, -)	(+, -)

4. a) $P_1(5, 10)$ $P_2(4, -4)$ $P_3(-6, 9)$

b) P_1 $r = \sqrt{5^2 + 10^2} = 11.2$ $\theta = \arctan\left(\frac{10}{5}\right) = 63^\circ$
 $P_1(11.2, 63^\circ)$

P_2 $r = \sqrt{4^2 + (-4)^2} = 5.66$ $\theta = \arctan\left(\frac{-4}{4}\right) = -45^\circ$
 $P_2(5.66, -45^\circ)$ or $P_2(5.66, 315^\circ)$

P_3 $r = \sqrt{(-6)^2 + 9^2} = 10.8$ $\theta = \arctan\left(\frac{9}{-6}\right) = 124^\circ$

$P_2(10.8, 124^\circ)$ 2nd quadrant