

- On the same coordinate plane, plot the points given in polar coordinates: $P(2, \frac{\pi}{2})$, $Q(2, -\frac{\pi}{3})$, $R(-2, \frac{5\pi}{4})$. Find the rectangular coordinates for P , Q and R .
- Consider point $P(3, \frac{5\pi}{6})$ in polar coordinates. Plot the point. Find other polar coordinates (r, θ) for P so that

$$a) r > 0, -2\pi \leq \theta < 0$$

$$b) r < 0, 0 \leq \theta < 2\pi$$

- Plot the points given in rectangular coordinates: $P(-4, -4)$, $Q(-3, 0)$, $R(2, 3)$. Find polar coordinates for P , Q and R .

- Transform the polar equations below to an equation in rectangular coordinates.

$$r \cos \theta = 4$$

$$r = 3$$

$$\theta = \frac{\pi}{3}$$

$$r = \frac{1}{\sin \theta + \cos \theta}$$

- If $z_1 = -1 + i$ and $z_2 = 1 + \sqrt{3}i$, answer the following.

a. Find the polar form of each.

b. Find $z_1 \cdot z_2$ and $\frac{z_1}{z_2}$

- Suppose $\mathbf{v} = \langle 2, 3 \rangle$ and $\mathbf{w} = \langle 3, -4 \rangle$.

a) $-2\mathbf{v} + 3\mathbf{w} =$

b) $\|\mathbf{v}\| =$

$\|\mathbf{w}\| =$

c) The unit vector in the direction of \mathbf{v} : $\mathbf{u} =$

d) Suppose that $P(-1, 1)$ is the initial point of \mathbf{v} , then the terminal point Q of \mathbf{v} is:

e) Suppose that $S(-2, 0)$ is the terminal point of \mathbf{w} , then the initial point R of \mathbf{w} is:

f) On the same coordinate plane draw \mathbf{v} , \mathbf{w} , $\mathbf{v} + \mathbf{w}$, $3\mathbf{v}$ and $-\mathbf{w}$ as position vectors.

- Suppose $\mathbf{v} = 3\mathbf{i} - 4\mathbf{j}$ and $\mathbf{w} = \mathbf{i} + 7\mathbf{j}$.

a) Find $\|\mathbf{v}\|$ and $\|\mathbf{w}\|$

b) Find $\mathbf{v} \cdot \mathbf{w}$

c) Find the angle between \mathbf{v} and \mathbf{w} .

d) Find the projection \mathbf{v}_1 of \mathbf{v} onto \mathbf{w} ; find $\mathbf{v}_2 = \mathbf{v} - \mathbf{v}_1$

- Write \mathbf{F}_1 and \mathbf{F}_2 pictured below in the form $a\mathbf{i} + b\mathbf{j}$, and then find the resultant force, $\mathbf{F}_1 + \mathbf{F}_2$.

