

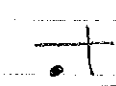


1.  $u = \langle -8, 3 \rangle$    $\sqrt{73} \langle \cos 159.44^\circ, \sin 159.44^\circ \rangle$   
 $\sqrt{(-8)^2 + 3^2} = \sqrt{64 + 9} = \sqrt{73}$

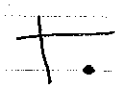
$\theta = \tan^{-1}\left(\frac{3}{-8}\right) = -20.56^\circ + 180 = 159.44^\circ$

2.  $\vec{b} = -11j$    $11(\cos 270^\circ i + \sin 270^\circ j)$   
 $\sqrt{0^2 + (-11)^2} = \sqrt{121} = 11$


$\theta = \tan^{-1}\left(\frac{-11}{0}\right) = \tan^{-1}(\text{und}) = 270^\circ$

3.  $\vec{d} = -2i - 5j$    $\sqrt{29}(\cos 248.2^\circ i + \sin 248.2^\circ j)$   
 $\sqrt{(-2)^2 + (-5)^2} = \sqrt{4 + 25} = \sqrt{29}$

$\theta = \tan^{-1}\left(\frac{-5}{-2}\right) = \tan\left(\frac{5}{2}\right) = 68.2 + 180 = 248.2^\circ$

4.  $(-4, 8)(2, -9) = \langle 6, -17 \rangle$    $5\sqrt{13} \langle \cos 289.44^\circ, \sin 289.44^\circ \rangle$   
 $\sqrt{6^2 + (-17)^2} = \sqrt{325} = 5\sqrt{13}$   
 $5 \cdot 5 \cdot 13$  or  $5\sqrt{13}(\cos 289.44^\circ i + \sin 289.44^\circ j)$

$\theta = \tan^{-1}\left(\frac{-17}{6}\right) = -70.56 + 360 = 289.44^\circ$

5.  $\vec{v} = 5(\cos 30^\circ i + \sin 30^\circ j)$   
 $\langle 5 \cdot \frac{\sqrt{3}}{2}, 5 \cdot \frac{1}{2} \rangle = \langle \frac{5\sqrt{3}}{2}, \frac{5}{2} \rangle$  

$\sqrt{\left(\frac{5\sqrt{3}}{2}\right)^2 + \left(\frac{5}{2}\right)^2} = \sqrt{\frac{75}{4} + \frac{25}{4}} = \sqrt{\frac{100}{4}} = \sqrt{25} = 5$

$\theta = \tan^{-1}\left(\frac{5/2}{5\sqrt{3}/2}\right) = \tan^{-1}\left(\frac{5}{5\sqrt{3}}\right) = \tan^{-1}\left(\frac{1}{\sqrt{3}}\right) = \tan^{-1}\left(\frac{\sqrt{3}}{3}\right) = 30^\circ$

6.  $\vec{v} = 8(\cos 135^\circ i + \sin 135^\circ j)$   
 $\langle 8 \cdot \frac{\sqrt{2}}{2}, 8 \cdot \frac{\sqrt{2}}{2} \rangle = \langle -4\sqrt{2}, 4\sqrt{2} \rangle$

$\sqrt{(-4\sqrt{2})^2 + (4\sqrt{2})^2} = \sqrt{32 + 32} = \sqrt{64} = 8$

$\theta = \tan^{-1}\left(\frac{4\sqrt{2}}{-4\sqrt{2}}\right) = \tan^{-1}(-1) = 135^\circ$

$$\begin{aligned}
 7. & 2(\cos 40^\circ i + \sin 40^\circ j) + 3(\cos 110^\circ i + \sin 110^\circ j) \\
 & 2(-.77i + .64j) + 3(-.34i + .94j) \\
 & (1.54i + 1.28j) + (-1.02i + 2.82j) \\
 & .52i + 4.10j \\
 & \boxed{\langle .52, 4.1 \rangle}
 \end{aligned}$$

$$\begin{aligned}
 8. & 10(\cos 219^\circ i + \sin 219^\circ j) - 6(\cos 301^\circ i + \sin 301^\circ j) \\
 & 10(-.78i + -.63j) - 6(.52i + -.86j) \\
 & (-7.8i - 6.3j) + (-3.12i + 5.16j) \\
 & -10.92i + -1.14j \\
 & \boxed{\langle -10.92, -1.14 \rangle}
 \end{aligned}$$

$$\begin{aligned}
 9. & \|v\| = 5, u = \langle 3, 3 \rangle \quad \dagger \\
 & \theta = \tan^{-1}\left(\frac{3}{3}\right) = \tan^{-1}(1) = 45^\circ
 \end{aligned}$$

$$\boxed{5\langle \cos 45^\circ, \sin 45^\circ \rangle}$$

$$5\left\langle \frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right\rangle$$

$$\boxed{\left\langle \frac{5\sqrt{2}}{2}, \frac{5\sqrt{2}}{2} \right\rangle}$$

$$\begin{aligned}
 10. & \|v\| = 3, u = \langle 4, -4 \rangle \quad \dagger \\
 & \theta = \tan^{-1}\left(\frac{-4}{4}\right) = \tan^{-1}(-1) = 315^\circ
 \end{aligned}$$

$$\boxed{3\langle \cos 315^\circ, \sin 315^\circ \rangle}$$

$$3\left\langle \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2} \right\rangle$$

$$\boxed{\left\langle \frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2} \right\rangle}$$

$$\begin{aligned}
 \dagger 11. & \|v\| = 10, u = 2i - 3j \\
 & \theta = \tan^{-1}\left(\frac{-3}{2}\right) = \frac{-56.31^\circ}{+360}
 \end{aligned}$$

$$303.69^\circ$$

$$\boxed{10(\cos 303.69^\circ i + \sin 303.69^\circ j)}$$

$$\boxed{5.55i - 8.32j}$$

$$\begin{aligned}
 12. & \|v\| = 8, u = -2i \quad \dagger \\
 & \theta = \tan^{-1}\left(\frac{0}{-2}\right) = \tan^{-1}(0) = 180^\circ
 \end{aligned}$$

$$\boxed{8(\cos 180^\circ i + \sin 180^\circ j)}$$

$$8(-1i + 0j)$$

$$\boxed{-8i}$$