

Pre-Calculus Worksheet 6.3, 6.5

1. Find the component form given the initial point $(-1,-1)$ and terminal point $(3,5)$.

2. Find the following given $u = \langle 9, 2 \rangle$ and $v = \left\langle -1, \frac{1}{2} \right\rangle$.

a) $5u-4v$

b) A unit vector in the same direction as u .

3. Find the component form of the vector v with the given magnitude and the same direction as u . Do not use decimals. $\|v\| = 8$ $u = \langle -5, -5 \rangle$

4. Find the component form of the vector v with the given magnitude and the angle it makes with the positive x axis. Do not use decimals. $\|v\| = 5$ $\theta = \frac{2\pi}{3}$

5. A plane left KCI traveling at 425 mph on a bearing of $S27^\circ W$. If the wind is blowing at 46 mph with a bearing of $N72^\circ W$, what is the actual speed and bearing of the plane?

6. Plot the complex number and find its absolute value.

a) $-3i$

b) $2 - 7i$

7. Represent the complex number graphically and put it into trig form.

a) $12 + 5i$

b) $-7 + 4i$

8. Represent the complex graphically and put it into standard form.

a) $2\left(\cos\frac{3\pi}{4} + i\sin\frac{3\pi}{4}\right)$

b) $(\cos 235^\circ + i\sin 235^\circ)$

9. Find $z_1 \cdot z_2$ and $\frac{z_1}{z_2}$, given $z_1 = 12(\cos 137^\circ + i\sin 137^\circ)$ and $z_2 = 2(\cos 82^\circ + i\sin 82^\circ)$

10. Find the following. Put your answers in standard form.

a) $(-2 + 6i)^4$

b) $(\sqrt{3} - 2i)^5$

11. Find the indicated roots of the given complex number.

a) Fourth roots of -81

b) Cube roots of $8i$

12. Find the cube roots of the given complex number.

