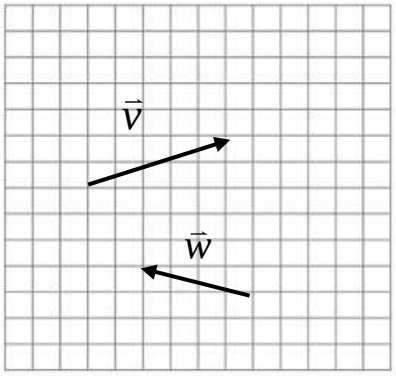
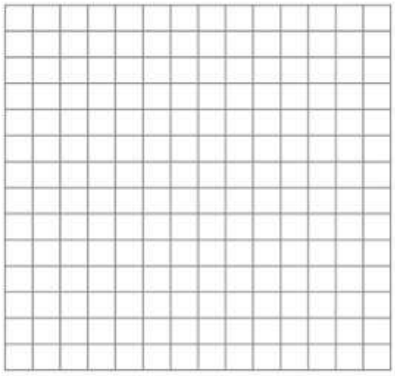
Accel Precalc Review Worksheet: Vectors Name _____
Unit #8: Extended Trigonometry

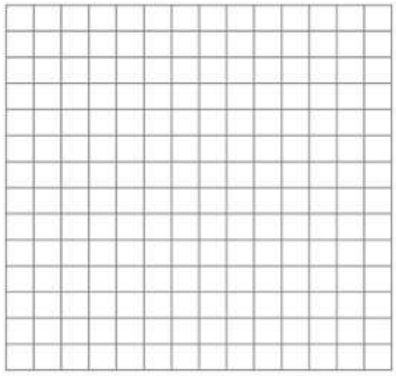
I. Use the diagram of vectors **u** and **v** to sketch the graph of 1) 2**v** + **w** and 2) **v** – 3**w** .



1.

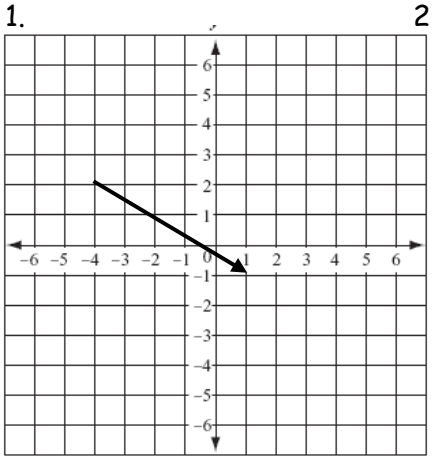


2.

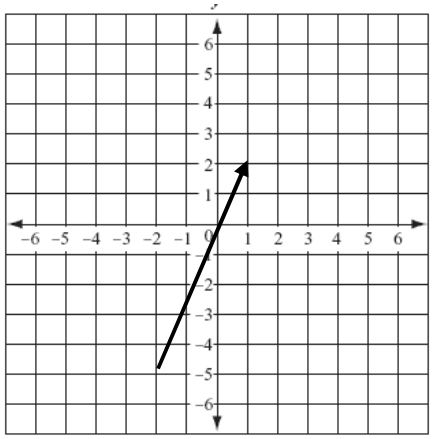


II. Find the component form $\langle a, b \rangle$ and magnitude of each vector **v**.

1.



2.



3. initial pt: (-7, 3)
terminal pt: (4, 1)

4. initial pt: (-2, -4)
terminal pt: (-5, 3)

III. Write vectors #1 – 4 in Part II as a position vector in the form **v** = ai + bj.

1. 2. 3. 4.

5. The component form $\langle a, b \rangle$ of a vector represents a vector whose initial point is the _____.

IV. Find the magnitude of each vector.

1. **v** = $\langle 1, -2 \rangle$ 2. **v** = 4i – 3j 3. **v** = $\langle 5, 3 \rangle$

4. **v** = i + j 5. **v** = $\left\langle \frac{3}{5}, \frac{4}{5} \right\rangle$

V. Find a unit vector, **u**, in the direction of the given vector.

1. **v** = 2i + j
2. **v** = $\langle 3,0 \rangle$
3. **v** = $\langle -5,4 \rangle$

VI. Find a) **u** + **v** b) 2**u** – **v** c) 3**u** – 2**v**

1. **u** = $\langle 2,-7 \rangle$, **v** = $\langle 0,3 \rangle$
2. **u** = 2i – 4j, **v** = i + 5j
3. **u** = $\langle -3,-1 \rangle$, **v** = $\langle -6,0 \rangle$

VII. Find the magnitude and the direction angle of each vector. Give angles in decimal degrees to the nearest whole degree.

1. **v** = $\langle 1,-1 \rangle$
2. **v** = $\langle -3,\sqrt{3} \rangle$
3. **v** = $\langle -4\sqrt{2},4\sqrt{2} \rangle$
4. **v** = $\langle -3,-3 \rangle$
5. **v** = $\langle -8,15 \rangle$
6. **v** = $\langle 6,8 \rangle$
7. **v** = $\langle -5,0 \rangle$
8. **v** = $\langle 0,4 \rangle$

VIII. Find the component form $\langle a,b \rangle$ of the vector, **v**, given its magnitude and direction angle.

1. $\theta = 30^\circ \quad \|v\| = 24$
2. $\theta = 84.7^\circ \quad \|v\| = 52.9$
3. $\theta = 60^\circ \quad \|v\| = 80$
4. $\theta = 45^\circ \quad \|v\| = 5$
5. $\theta = 136^\circ \quad \|v\| = 7$
6. $\theta = 210^\circ \quad \|v\| = 6$

IX. Find the angle, α, between the vectors.

1. **v** = 2i + j, **w** = -3i - 4j
2. **v** = i + 3j, **w** = -2i + 2j
3. **v** = 6i – j, **w** = -4i - 2j

X. Vectors **v** and **w** represent two forces acting at the same point and θ is the smallest positive angle between **v** and **w**. Find the magnitude (tenths) and direction angle (whole) of the resultant force.

1. **w** = 40 lbs., **v** = 70 lbs, θ = 45°
2. **w** = 2 kg, **v** = 8 kg, θ = 120°
3. **w** = 30 lbs, **v** = 50 lbs, θ = 150°