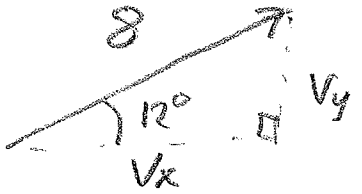
SHEET #1012 : NAME: KEY Period: ____

PRACTICE ON VECTOR COMPONENTS

1. FIND x AND y COMPONENTS OF $\vec{v}$



$V_x = 8\cos 12^\circ \approx \boxed{7.825}$

$V_y = 8 \sin 12^\circ \approx \boxed{1.663}$

2. FIND LENGTH & DIRECTION (ANGLE) OF A VECTOR WITH

$V_x = 4$

$V_y = 7$

$V = \sqrt{4^2+7^2} = \sqrt{65} \approx \boxed{8.062}$

$\theta = \tan^{-1}\left(\frac{7}{4}\right) \approx \boxed{60.255^\circ}$

$= \sin^{-1}(7/\sqrt{65}) = \cos^{-1}(4/\sqrt{65})$

3. GIVEN THE VECTORS

$\vec{v} = 4\vec{i} + 3\vec{j}$

$\vec{u} = 9\vec{i} - 5\vec{j}$

a) FIND $\vec{w} = \vec{v} + \vec{u}$

$\vec{w} = (4+9)\vec{i} + (3-5)\vec{j} = \boxed{13\vec{i} - 2\vec{j}}$

b) FIND THE LENGTH OF $\vec{w}$

$w = |\vec{w}| = \sqrt{13^2 + 2^2} = \sqrt{173} \approx \boxed{13.153}$

c) $v = |\vec{v}| = 5$, $u = |\vec{u}| = \sqrt{105} \approx 10.296$ They are NOT parallel, so $w \neq v + u$. They add like vectors, not scalars.