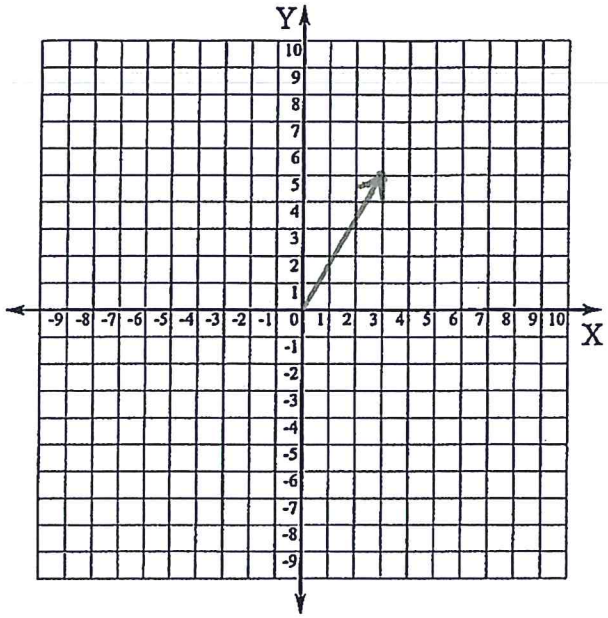
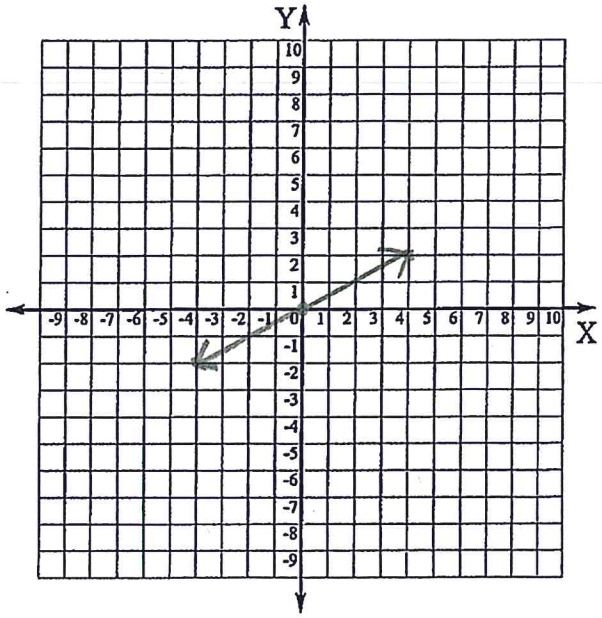
$\hat{a} = \langle 3, 5 \rangle$

$\hat{b} = \langle 4, 2 \rangle$

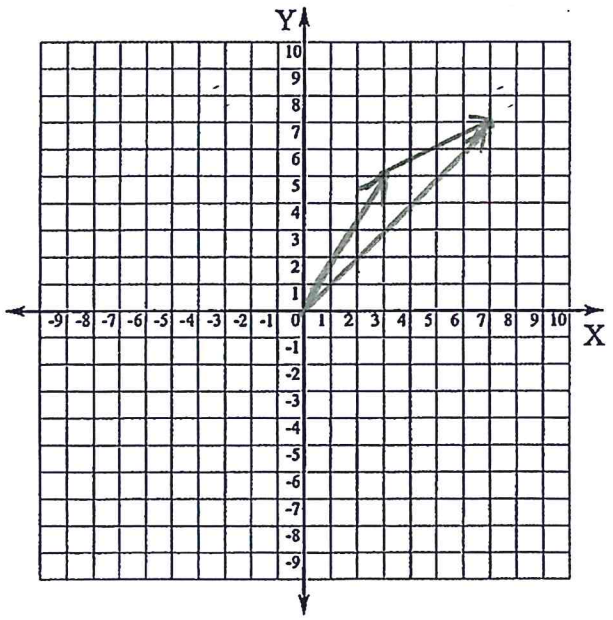
and $-\hat{b} = \langle -4, -2 \rangle$

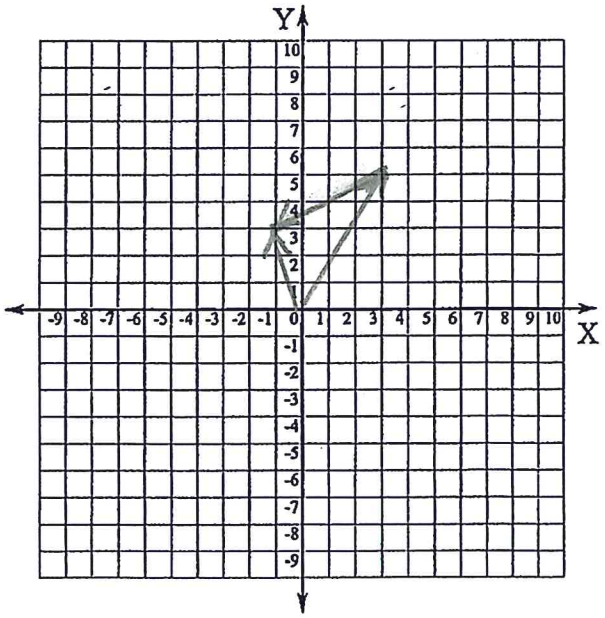




$\hat{a} + \hat{b} = \langle 7, 7 \rangle$

$\hat{a} - \hat{b} = \langle -1, 3 \rangle$

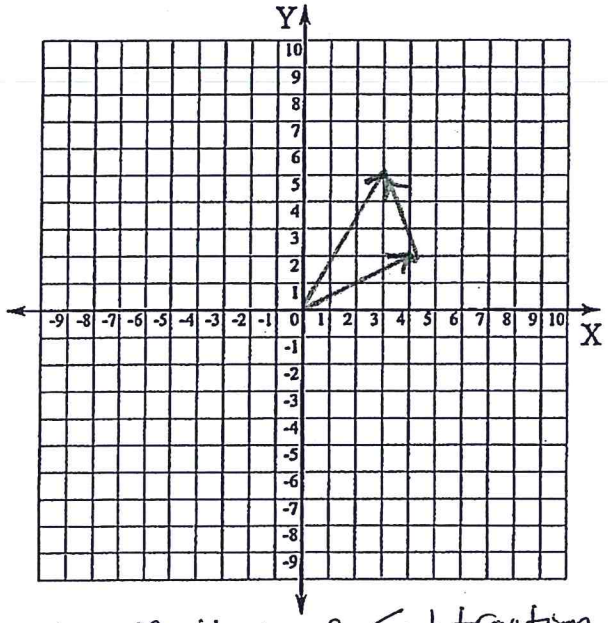




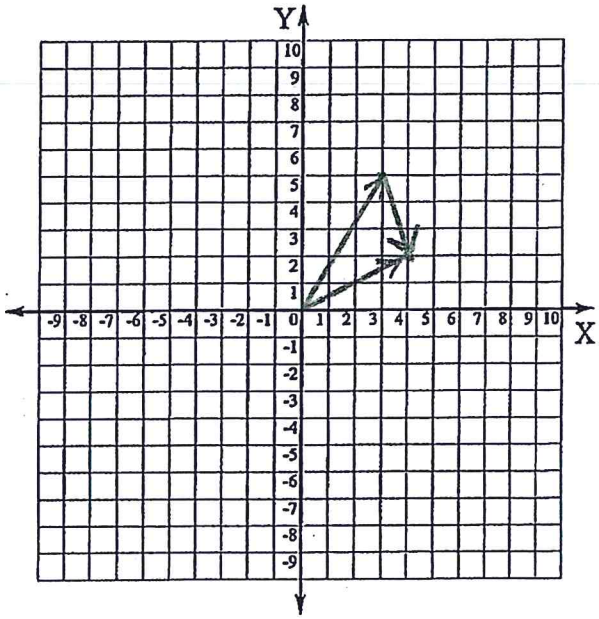
Triangle Method of Addition (Tail on Tip)
or
"Tip To Tail"

Same, using $-\hat{b}$ in place of $\hat{b}$

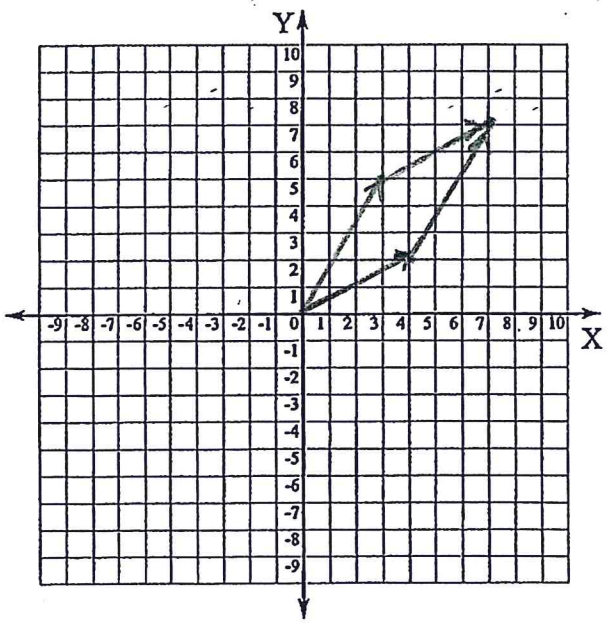
$\hat{a} - \hat{b} = \langle -1, 3 \rangle$ $\hat{b} - \hat{a} = \langle 1, -3 \rangle$



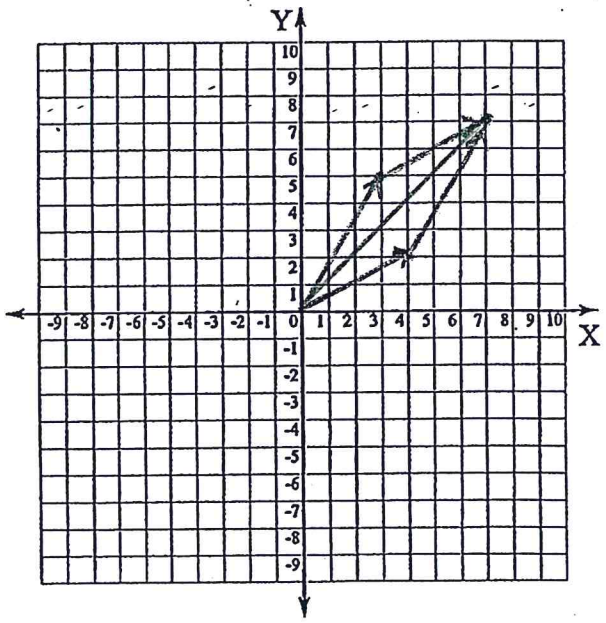
Triangle Method of Subtraction
(Tip To Tip)



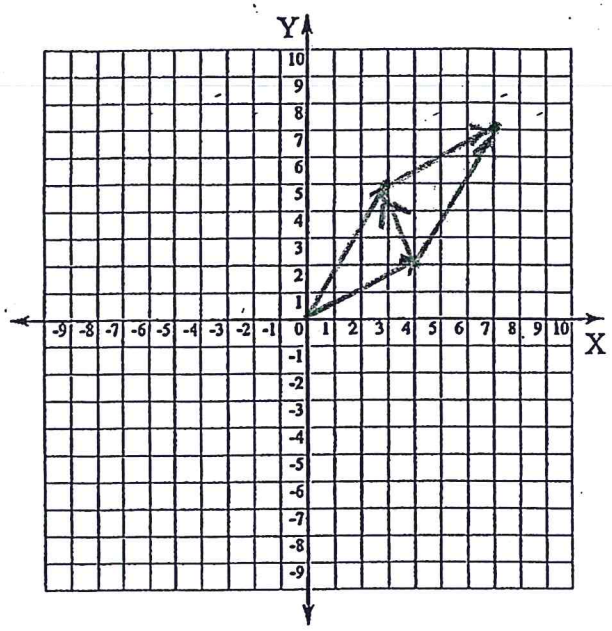
Same



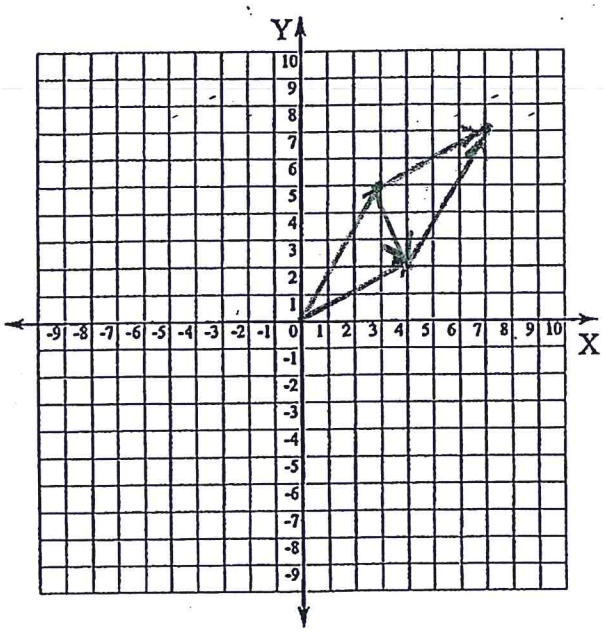
Here is the parallelogram determined by $\hat{a}$ and $\hat{b}$



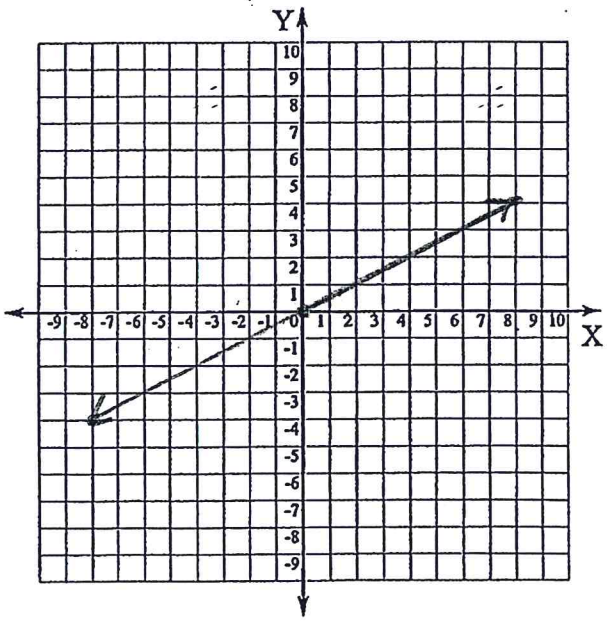
This diagonal represents $\hat{a} + \hat{b}$



This diagonal represents $\hat{a} - \hat{b}$

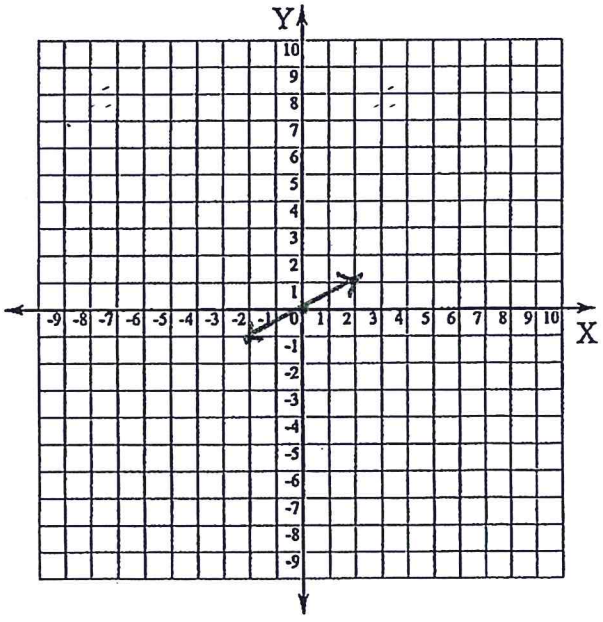


This diagonal represents $\hat{b} - \hat{a}$



$2\hat{b} = \langle 8, 4 \rangle$

$-2\hat{b} = \langle -8, -4 \rangle$



$\frac{1}{2}\hat{b} = \langle 2, 1 \rangle$

$-\frac{1}{2}\hat{b} = \langle -2, -1 \rangle$