4) since F is translate (image) of C by the vector translation
a) $\vec{CA} + \vec{CM}$ (Given)

then, $\vec{CF} = \vec{CA} + \vec{CM}$

So, quadrilateral CAFM is a parm
but, C belongs to (BC), the perp. bisector of [AM].
then, C is equidistant from extremities A & M.
hence, CA = CM.
Thus, parm CAFM is a rhombus (parm + equal adj. sides).

b). F is the 4th vertex of rhombus CAFM (proved)
then, $\vec{CA} = \vec{MF}$

So, $X_{\vec{CA}} = X_{\vec{MF}}$ & $Y_{\vec{CA}} = Y_{\vec{MF}}$

$x_A - x_C = x_F - x_M$
$+1 = x_F + 6$
$x_F = $.

$y_A - y_C = y_F - y_m$.
$-7 = y_F + 2$
$y_F = -9$.

Thus, F (-5, -9)

5). In right △ ACH apply Pythagorean theorem to find $\overline{CH}$.

$AC^2 = AH^2 + CH^2$
So, $CH^2 = AC^2 - AH^2$
$= 50 - 10$
$\sqrt{CH^2} = \sqrt{40}$
$CH = 2\sqrt{10}$ units of length

$\tan C\hat{A}H = \frac{opp}{hyp} = \frac{CH}{AH} = \frac{2\sqrt{10}}{\sqrt{10}}$
$\therefore \tan C\hat{A}H = 2$.
And, $C\hat{A}H = \tan^{-1} 2$
$\boxed{C\hat{A}H \simeq 63.4^\circ}$

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