(14 1/3)

$H(q,p,t) = H_0(q,p) + \varepsilon q \sin\Omega t$
$= \frac{p^2}{2} + V(q) + \varepsilon q \sin\Omega t$

$\dot{q} = \frac{\partial H}{\partial p} = p$

$\dot{p} = -\frac{\partial H}{\partial q} = -V'(q) - \varepsilon \sin\Omega t$ ✓

$G = \begin{pmatrix} p \\ -V'(q) \end{pmatrix}$ ✓ $G_1 = p$
$G_2 = -V'(q)$

$P = \begin{pmatrix} 0 \\ -\sin\Omega t \end{pmatrix}$ ✓ $P_1 = 0$
$P_2 = -\sin\Omega t$

Using melnikov's f^{n}

$M(t_0) = \int_{-\infty}^{\infty} \{G_1(\tau)P_2(\tau,\tau+t_0) - G_2(\tau)P_1(\tau,\tau+t_0)\}d\tau$

$= \int_{-\infty}^{\infty} \{p(\tau) \cdot -\sin\Omega(\tau+t_0) - -V'(q(\tau)) \cdot 0\} d\tau$

$= -\int_{-\infty}^{\infty} p(\tau)\sin\Omega(\tau+t_0)\,d\tau$ ✓

$= -\int_{-\infty}^{\infty} p(\tau)(\sin\Omega\tau\cos\Omega t_0 + \cos\Omega\tau\sin\Omega t_0)\,d\tau$

$= -\int_{-\infty}^{\infty} p(\tau)\sin\Omega\tau\cos\Omega t_0 - \int_{-\infty}^{\infty} p(\tau)\cos\Omega\tau\sin\Omega t_0\,d\tau$

$= -\cos\Omega t_0 \int_{-\infty}^{\infty} p(\tau)\sin\Omega\tau\,d\tau - \sin\Omega t_0 \int_{-\infty}^{\infty} p(\tau)\cos\Omega\tau\,d\tau$

Assuming time is measured from pt where these f^{ns} are so

$p(\tau)$, $\sin\Omega\tau$ are both odd. ✓
$\therefore p(\tau)\sin\Omega\tau$ is even ✓
$\cos\Omega\tau$ is even $\therefore p(\tau)\cos\Omega\tau$ is odd
$\therefore \int_0^{\infty} p(\tau)\cos\Omega\tau\,d\tau = -\int_{-\infty}^{0} p(\tau)\cos\Omega\tau\,d\tau$

$\int_{-\infty}^{\infty} p(\tau)\cos\Omega\tau\,d\tau = 0$

$\therefore M(t_0) = -\cos\Omega t_0 \int_{-\infty}^{\infty} p(\tau)\sin\Omega\tau\,d\tau$ ✓
$= -2\cos\Omega t_0 \int_0^{\infty} p(\tau)\sin\Omega\tau\,d\tau \neq 0$