3) $X(t) = \sum a_n \cos(n\omega_0 t) + b_n \operatorname{sen}(n\omega_0 t)$

$X'(t) = \sum a_n \frac{d}{dt}\{\cos(n\omega_0 t) + b_n \frac{d}{dt} \operatorname{sen} n\omega_0 t$

$X'(t) = \sum a_n (-\operatorname{sen}(n\omega_0 t) n\omega_0) + b_n \cos(n\omega_0 t) n\omega_0$

$X''(t) = \sum a_n \cos(n\omega_0 t)(-n\omega_0)^2) + b_n \operatorname{sen}(n\omega_0 t)$
$(-(n\omega_0)^2)$

$= \sum(-a_n n^2\omega_0^2)\cos(n\omega_0 t) + (-b_n n^2\omega_0^2)$
$\operatorname{sen}(n\omega_0 t)$

$a_n = \frac{2}{T}\int x''(t)\cos(n\omega_0 t)\,dt$

$-a_n n^2\omega_0^2 = a_n = \frac{2}{(t_i - t_f) n^2\omega_0^2}\int x''(t)\cos(n\omega_0 t)\,dt$

$b_n = \frac{2}{(t_i - t_f) n^2\omega_0^2}\int x''(t)\operatorname{sen}(n\omega_0 t)\,dt$