$$X_3(f) = \cos(2\pi f_1 t)\cos(2\pi f_0 t)$$

$a = 2\pi f_1 t \quad b = 2\pi f_0 t$

$\cos(a+b) = \cos(a)\cos(b) - \sin(a)\sin(b)$

$\cos(a-b) = \cos(a)\cos(b) + \sin(a)\sin(b)$

$\cos(a+b) + \cos(a-b) = 2\cos(a)\cos(b)$

$\therefore \quad X_3(t) = \cos(2\pi f_1 t)\cos(2\pi f_0 t)$

$= \frac{1}{2}\left[\cos(2\pi t(f_1+f_0)) + \cos(2\pi t(f_1-f_0))\right]$