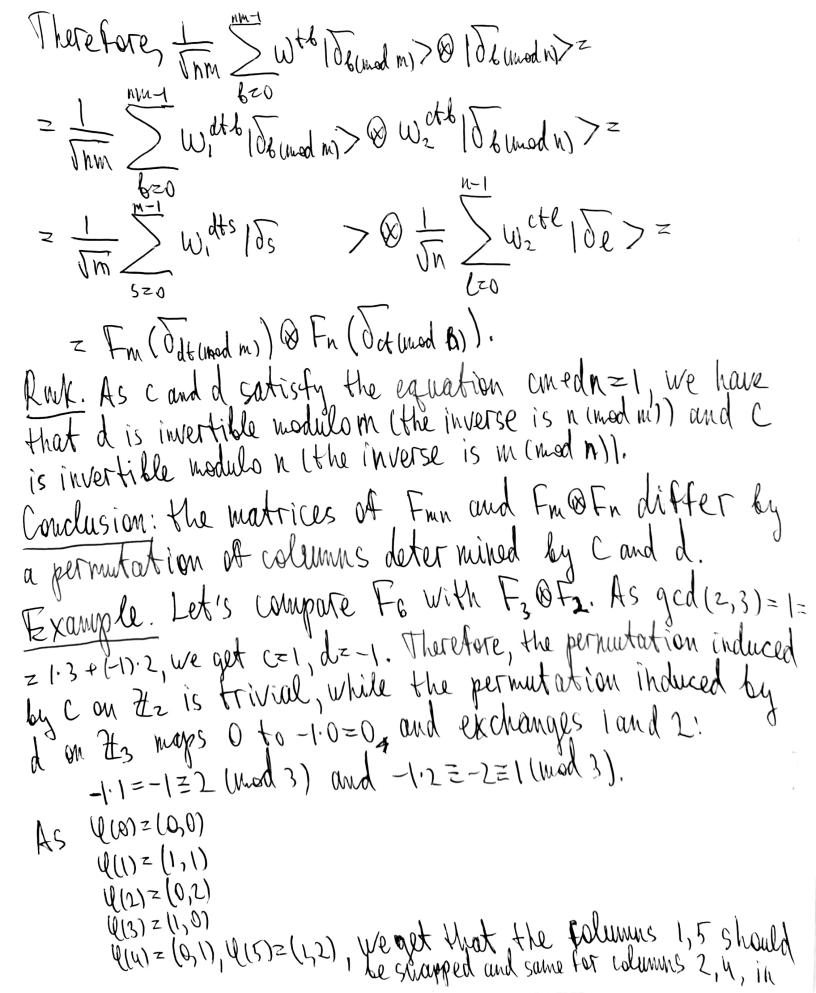
At some point we touched base on the following question. Let m, n e 2/21 be coprime, i.e. gcd(m,n)=1. Then the two abelian groups, 2/2 and 2/2 x 2/2 are is omorphic via 4:71. Lecture 19. V: 7 mn > 2 nx 2 n with Um = (h1) (so Ulk) = (k (mod m)) k (mod n)). There are 2 ways we can define discrete Fourier transform: directly, using the matrix Fmn = Jmn (1 W--Wmn-1)2 with w= e 2012/mn or as Fm@Fn with $F_{m} = \frac{1}{\sqrt{m}} \left(\frac{1}{|w_{1}|^{m-1}} - \frac{1}{|w_{1}|^{m-1}} \right) \left(\frac{1}{|w_{2}|^{m-1}} - \frac{1}{|w_{2}|^{m-1}} \right) \left(\frac{1}{|$ We shall compare the two: let termin, then

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\text{From (Ox)} = \int \wedge t Hence, wtb = wcmtdn) tb = wcmtb, wdntb = w2th, w, dtb = w, dtb w, ctf



order to match Fo and F20F3. Let's check it.

$$F_{2} = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} + F_{3} = \frac{1}{\sqrt{3}} \begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & 1 \\ 1 & 2 & 1 \end{pmatrix}$$

From
$$f_3 = \frac{1}{\sqrt{6}}$$
 $\frac{1}{\sqrt{2}}$
 $\frac{1$