So $\begin{bmatrix} 1 & \cdots & -1 \end{bmatrix}$ $\begin{bmatrix} 2 & * & & * \\ * & 2 & * & \\ & * & \ddots & * \\ * & & * & 2 \end{bmatrix}$ $\begin{bmatrix} 1 \\ \vdots \\ 1 \end{bmatrix} > 0$ $\quad \lambda = -2\cos\left(\frac{\pi}{m_{i,i+1}}\right)$

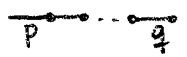
$\leq -2\cos\left(\frac{\pi}{3}\right) = -1$

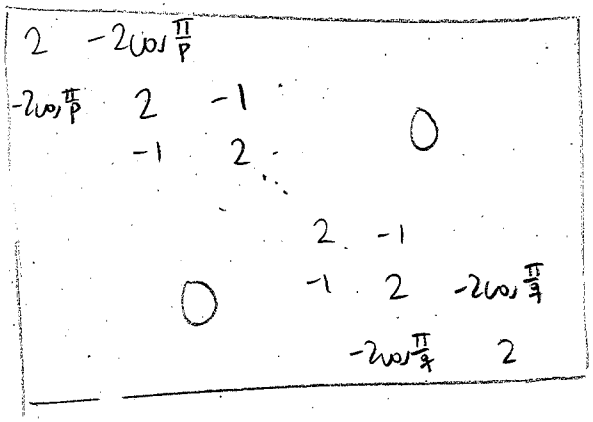
sum of entries

$=$

$2n + (2n \text{ things} \leq -1) \leq 0.$ ✓

3. Γ has at most one edge >3

If not, take an induced  $p, q > 3$

So 

pos. def

So $2n - 2(n-2) - 4\cos\frac{\pi}{p} - 4\cos\frac{\pi}{q} > 0$

$1 - \cos\frac{\pi}{p} - \cos\frac{\pi}{q} > 0$

$\cos\frac{\pi}{p} \geq \cos\frac{\pi}{4} = \frac{\sqrt{2}}{2} > \frac{1}{2}$ ✓

4. If Γ has an edge >3, it is a straight line

If not, have an induced 

$d(\Gamma) = 2d(D_{n-1}) - 4\cos^2\frac{\pi}{p}\, d(D_{n-2})$

$= 8 - 16\cos^2\frac{\pi}{p} \leq 0$ ✓

5. Γ has at most one branching point

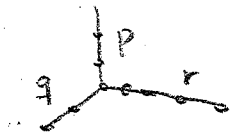
If not, have an induced 

$d(\Gamma) = 2d(D_{n-1}) - d(D_{n-2} \times A_1) = 2 \cdot 4 - 4 \cdot 2 = 0$ ✓

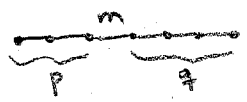
6. Γ has no branching point with ≥ 4 branches

Otherwise, have an induced X and

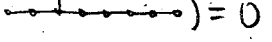
$d(X) = 2d(\lambda) - d(\because) = 2 \cdot 4 - 2 \cdot 2 \cdot 2 = 0$ ✓

So Γ is either 

$= Y_{p,q,r}$

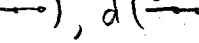
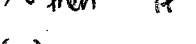
or 

$= I_{p,q}(m)$

Check: $d($  $) = 0$ → if $r \geq 5$ must be $Y_{1,1,r} = D_{r+3}$

$d($  $) = 0$ → can't have $p, q, r \geq 2$

So must be $Y_{1,3,3}, Y_{1,3,4}, Y_{1,3,5}$, or $Y_{1,1,r}$
E_6 E_7 E_8 D_{r+3}

Check: $d($  $), d($  $), d($  $), d($  $) \leq 0$

If ≥ 6 then $I_2(m)$ — If 5 then H_3 or H_4 — If 4 then B_n or F_4