

*In The Mood*

$$1 = A^b$$

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The diagram illustrates a sequence of numbers arranged in a staircase pattern across 16 vertical lines. The numbers are grouped into 16 boxes, with some boxes containing multiple numbers or symbols like # and b.

Line	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8	Box 9	Box 10	Box 11	Box 12	Box 13	Box 14	Box 15	Box 16	
1	1																
2		3															
3			5														
4				1													
5					1												
6						1											
7							1										
8								7									
9									1								
10										5							
11											5						
12												#4					
13													4				
14														3			
15															b3		
16																2	
17																	1
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Diagram illustrating the decomposition of the 7th power of the 2x2 matrix  $A$  into a sum of 7th powers of 2x2 matrices. The diagram shows four columns, each representing a term in the sum. The first column is labeled  $2^7$ , the second  $2^7$ , the third  $2^7$ , and the fourth  $5^7$ . Each column contains a sequence of numbers (2, 3, 2, 1, 6, 6, 3) arranged in a staircase pattern, representing the coefficients of the matrix powers.

The figure consists of four sub-diagrams, each showing a grid with rows labeled  $1^4$  and columns labeled  $1^7$ . The tiles are represented by numbers 1, 3, and 5 in blue boxes. The sequence of tile placements is as follows:

- Diagram 1:** Shows the initial placement of tiles. The first row (labeled  $1^4$ ) has tiles at columns 1, 3, 5, and 7. The second row has tiles at columns 1, 3, 5, and 7. The third row has tiles at columns 1, 3, 5, and 7. The fourth row has tiles at columns 1, 3, 5, and 7.
- Diagram 2:** Shows the next step in the construction. The first row has tiles at columns 1, 3, 5, and 7. The second row has tiles at columns 1, 3, 5, and 7. The third row has tiles at columns 1, 3, 5, and 7. The fourth row has tiles at columns 1, 3, 5, and 7.
- Diagram 3:** Shows the next step in the construction. The first row has tiles at columns 1, 3, 5, and 7. The second row has tiles at columns 1, 3, 5, and 7. The third row has tiles at columns 1, 3, 5, and 7. The fourth row has tiles at columns 1, 3, 5, and 7.
- Diagram 4:** Shows the final step in the construction. The first row has tiles at columns 1, 3, 5, and 7. The second row has tiles at columns 1, 3, 5, and 7. The third row has tiles at columns 1, 3, 5, and 7. The fourth row has tiles at columns 1, 3, 5, and 7.

Diagram illustrating the decomposition of the 4th power of the adjoint representation of  $E_6$  into irreducible representations of  $F_4$ .

The diagram shows two rows of boxes, each representing a decomposition. The top row is labeled  $4^4$  and the bottom row is labeled  $1^4$ .

**Top Row ( $4^4$ ):**

- Box 1: 4 (1 box)
- Box 2: 6 (1 box)
- Box 3: 1 (1 box)
- Box 4: 4 (1 box)
- Box 5: 6 (1 box)
- Box 6: 1 (1 box)
- Box 7: 4 (1 box)
- Box 8: 6 (1 box)
- Box 9: 1 (1 box)
- Box 10: 4 (1 box)
- Box 11: 6 (1 box)
- Box 12: 1 (1 box)
- Box 13: 4 (1 box)
- Box 14: 6 (1 box)
- Box 15: 1 (1 box)
- Box 16: 4 (1 box)
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- Box 18: 1 (1 box)
- Box 19: 4 (1 box)
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