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Advanced Algorithms

18 November 2023

5.4

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Description automatically generated

Basis vectors:

(1, 1, 0, 0, 0, 0, 0 , 0 )

(-1, 0, -2, 1, 0, 0, 0, 0)

(0 , 0, 1, 0, 1 , 0, 0, 0)

(0, 0, 0, 0, 0 , -2, 1, 0)

(0, 0, 0, 0, 0, -1, 0, 1)

Offset vector:

(3 , 0 , 1 , 0 , 0 ,-1, 0, 0, 0)

Final equation:

(1, 1, 0, 0, 0, 0, 0 , 0 )x + (-1, 0, -2, 1, 0, 0, 0, 0)y + (0 , 0, 1, 0, 1 , 0, 0, 0)z + (0, 0, 0, 0, 0 , -2, 1, 0)m + (0, 0, 0, 0, 0, -1, 0, 1) k + (3 , 0 , 1 , 0 , 0 ,-1, 0, 0, 0)

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Description automatically generated

Basis vectors:

(-4, 1, 0 , 0, 0)

(-3 , 0, -9 , 1, 0)

Offset vector: (this may not be possible to accommodate all possible constants)

(1, 0, 0, 0, 0)

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Description automatically generated

Steps:

R1 = R1 – R4 = (1 0 0 0) (1)

R2 = R2 – (2R1) = ( 0 , 1, 1, 0 ) (-1)

R3 = R3 – 3R1 = ( 0 1 2 1) (0)

R3 = R3 – R2= ( 0 0 1 1) (1)

R4 = R4 – R3 = (0 0 0 0 ) (0)

Final:

(1 , 0 ,0 0 ) (1)

(0 1 1 0 ) (-1)

( 0 0 1 1 ) ( 1)

( 0 0 0 0 ) (0)

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Description automatically generated

Steps:

R1 = R1/R1 = (1 1 1 1) (1)

R2 = R2/R2 = (0 1 1 1) (1)

R3 = R3/R3 = (0 0 1 1) (1)

R4 = R4/R4 = (0 0 0 1) (1)

R1 = R1-R2 = ( 1 0 0 0) (0)

R2 = R2 – R3 = ( 0 1 0 0 ) (0)

R3 = R3 – R4 = (0 0 1 0 ) (0)

Final:

(1 0 0 0 ) (0)

(0 1 0 0) (0)

( 0 0 1 0) (0)

(0 0 0 1) (1)