REC-MAT-MULT(A, B, n)

  let C be a new $n \times n$ matrix
  if $n == 1$
     $c_{11} = a_{11} \cdot b_{11}$
  else partition A, B, and C into $n/2 \times n/2$ submatrices
     $C_{11} = $ REC-MAT-MULT(A_{11}, B_{11}, $n/2$) + REC-MAT-MULT(A_{12}, B_{21}, $n/2$)
     $C_{12} = $ REC-MAT-MULT(A_{11}, B_{12}, $n/2$) + REC-MAT-MULT(A_{12}, B_{22}, $n/2$)
     $C_{21} = $ REC-MAT-MULT(A_{21}, B_{11}, $n/2$) + REC-MAT-MULT(A_{22}, B_{21}, $n/2$)
     $C_{22} = $ REC-MAT-MULT(A_{21}, B_{12}, $n/2$) + REC-MAT-MULT(A_{22}, B_{22}, $n/2$)
  return C