```
> Student[LinearAlgebra][GaussJordanEliminationTutor]();
> with(linalg)
```

[BlockDiagonal, GramSchmidt, JordanBlock, LUdecomp, QRdecomp, Wronskian, addcol, addrow, adj, adjoint, angle, augment, backsub, band, basis, bezout, blockmatrix, charmat, charpoly, cholesky, col, coldim, colspace, colspan, companion, concat, cond, copyinto, crossprod, curl, definite, delcols, delrows, det, diag, diverge, dotprod, eigenvals, eigenvalues, eigenvectors, eigenvects, entermatrix, equal, exponential, extend, ffgausselim, fibonacci, forwardsub, frobenius, gausselim, gaussjord, geneqns, genmatrix, grad, hadamard, hermite, hessian, hilbert, htranspose, ihermite, indexfunc, innerprod, intbasis, inverse, ismith, issimilar, iszero, jacobian, jordan, kernel, laplacian, leastsqrs, linsolve, matadd, matrix, minor, minpoly, mulcol, mulrow, multiply, norm, normalize, nullspace, orthog, permanent, pivot, potential, randmatrix, randvector, rank, ratform, row, rowdim, rowspace, rowspan, rref, scalarmul, singularvals, smith, stackmatrix, submatrix, subvector, sumbasis, swapcol, swaprow, sylvester, toeplitz, trace, transpose, vandermonde, vecpotent, vectdim, vector, wronskian] **(1)**

```
> 2 x[1] + 0 + 2 x[3] = 1;
```

$$2\,x_1 + 2\,x_3 = 1 \quad \textbf{(2)}$$

```
> 3 x[1] - x[2] + 4 x[3] = 7;
```

$$3\,x_1 - x_2 + 4\,x_3 = 7 \quad \textbf{(3)}$$

```
> 6 x[1] + x[2] - 1 x[3] = 0;
```

$$6\,x_1 + x_2 - x_3 = 0 \quad \textbf{(4)}$$

```
> A := matrix(3, 3, [2, 0, 2, 3, -1, 4, 6, 1, -1]);
```

$$A := \begin{bmatrix} 2 & 0 & 2 \\ 3 & -1 & 4 \\ 6 & 1 & -1 \end{bmatrix} \quad \textbf{(5)}$$

```
> B := matrix(3, 1, [1, 7, 0]);
```

$$B := \begin{bmatrix} 1 \\ 7 \\ 0 \end{bmatrix} \quad \textbf{(6)}$$

```
> C := augment(A, B);
```

$$C := \begin{bmatrix} 2 & 0 & 2 & 1 \\ 3 & -1 & 4 & 7 \\ 6 & 1 & -1 & 0 \end{bmatrix} \quad \textbf{(7)}$$

```
> E := mulrow(C, 1, 1/2);
```

(8)

$$E := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 3 & -1 & 4 & 7 \\ 6 & 1 & -1 & 0 \end{bmatrix} \tag{8}$$

> $F := addrow(E, 1, 2, -3);$

$$F := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 0 & -1 & 1 & \frac{11}{2} \\ 6 & 1 & -1 & 0 \end{bmatrix} \tag{9}$$

> $G := mulrow(F, 2, -1);$

$$G := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 0 & 1 & -1 & -\frac{11}{2} \\ 6 & 1 & -1 & 0 \end{bmatrix} \tag{10}$$

> $H := addrow(G, 1, 3, -6);$

$$H := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 0 & 1 & -1 & -\frac{11}{2} \\ 0 & 1 & -7 & -3 \end{bmatrix} \tag{11}$$

> $J := addrow(H, 2, 3, -1);$

$$J := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 0 & 1 & -1 & -\frac{11}{2} \\ 0 & 0 & -6 & \frac{5}{2} \end{bmatrix} \tag{12}$$

> $K := mulrow\left(J, 3, -\frac{1}{6}\right);$

$$K := \begin{bmatrix} 1 & 0 & 1 & \frac{1}{2} \\ 0 & 1 & -1 & -\frac{11}{2} \\ 0 & 0 & 1 & -\frac{5}{12} \end{bmatrix} \tag{13}$$

> $L := addrow(K, 3, 1, -1);$

$$L := \begin{bmatrix} 1 & 0 & 0 & \frac{11}{12} \\ 0 & 1 & -1 & -\frac{11}{2} \\ 0 & 0 & 1 & -\frac{5}{12} \end{bmatrix} \quad (14)$$

> $M := addrow(L, 3, 2, 1);$

$$M := \begin{bmatrix} 1 & 0 & 0 & \frac{11}{12} \\ 0 & 1 & 0 & -\frac{71}{12} \\ 0 & 0 & 1 & -\frac{5}{12} \end{bmatrix} \quad (15)$$

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$$\begin{bmatrix} \frac{11}{12} \\ -\frac{71}{12} \\ -\frac{5}{12} \end{bmatrix} \quad (16)$$

>