```
> restart:with(linalg);
```

$[BlockDiagonal, GramSchmidt, JordanBlock, LUdecomp, QRdecomp, Wronskian, addcol,$ **(1)**

    $addrow, adj, adjoint, angle, augment, backsub, band, basis, bezout, blockmatrix, charmat,$

    $charpoly, cholesky, col, coldim, colspace, colspan, companion, concat, cond, copyinto,$

    $crossprod, curl, definite, delcols, delrows, det, diag, diverge, dotprod, eigenvals,$

    $eigenvalues, eigenvectors, eigenvects, entermatrix, equal, exponential, extend, ffgausselim,$

    $fibonacci, forwardsub, frobenius, gausselim, gaussjord, geneqns, genmatrix, grad,$

    $hadamard, hermite, hessian, hilbert, htranspose, ihermite, indexfunc, innerprod, intbasis,$

    $inverse, ismith, issimilar, iszero, jacobian, jordan, kernel, laplacian, leastsqrs, linsolve,$

    $matadd, matrix, minor, minpoly, mulcol, mulrow, multiply, norm, normalize, nullspace,$

    $orthog, permanent, pivot, potential, randmatrix, randvector, rank, ratform, row, rowdim,$

    $rowspace, rowspan, rref, scalarmul, singularvals, smith, stackmatrix, submatrix, subvector,$

    $sumbasis, swapcol, swaprow, sylvester, toeplitz, trace, transpose, vandermonde, vecpotent,$

    $vectdim, vector, wronskian]$

```
> R:=-x*y+2*y^2;S:=-x^2*y;
```

$$R := -x\,y + 2\,y^2$$

$$S := -x^2\,y$$ **(2)**

```
> x:=(U+V)/2;y:=(U-V)/(2*I);
```

$$x := \frac{1}{2}\,U + \frac{1}{2}\,V$$

$$y := -\frac{1}{2}\,I\,(U - V)$$ **(3)**

```
> G:=simplify(R+I*S);
```

$$G := \frac{1}{4}\,I\,U^2 - \frac{1}{4}\,I\,V^2 - \frac{1}{2}\,U^2 + U\,V - \frac{1}{2}\,V^2 - \frac{1}{8}\,U^3 - \frac{1}{8}\,U^2\,V + \frac{1}{8}\,U\,V^2 + \frac{1}{8}\,V^3$$ **(4)**

```
> g[20]:=diff(G,U,U);
```

$$g_{20} := -1 + \frac{1}{2}\,I - \frac{3}{4}\,U - \frac{1}{4}\,V$$ **(5)**

```
> g[11]:=diff(G,U,V);
```

$$g_{11} := 1 - \frac{1}{4}\,U + \frac{1}{4}\,V$$ **(6)**

```
> g[21]:=diff(G,U,U,V);
```

$$g_{21} := -\frac{1}{4}$$ **(7)**

```
> U:=0;V:=0;
```

$$U := 0$$

$$V := 0$$ **(8)**

```
> g[20]:=eval(g[20]);g[11]:=eval(g[11]);g[21]:=eval(g[21]);
```

$$g_{20} := -1 + \frac{1}{2}\,I$$

$$g_{11} := 1$$

$$g_{21} := -\frac{1}{4} \tag{9}$$

```
> l[1]:=(1/2)*Re(I*g[20]*g[11]+g[21]);
```

$$l_1 := -\frac{3}{8} \tag{10}$$