

MATEQ

Examples: choose box with examples	<pre> 9: 8: 7: 6: 5: 4: 3: 2: 1: </pre> <div>Examples</div> <div>'H=a=F'</div> <div>'H=Cross(r,F)'</div> <div>'L=Cross(r,p)'</div> <div>'Ekin=1/2*m*Dot(v,v)'</div> <div>'J=x*H'</div> <div>'Div(E)=4*pi*rho'</div> <div>'Curl(E)=1/c*Der(E,t)'</div> <div>'Curl(E)=1/c*Der(B,t)'</div>	<pre> 3: 2: 1: </pre> <div>m*a=F</div> <div>$\left[\begin{array}{l} \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (x(t)) \right) m = F_x \\ \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (y(t)) \right) m = F_y \\ \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (z(t)) \right) m = F_z \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>
Meval, d→der: evaluate matrix, vector equations. (1.5s)	<pre> RAD XYZ DEG R= 'X' [HOME MATEQ] USR 6: 5: 4: 3: 2: 1: </pre> <div>Div(E)=4*pi*rho</div> <div>$d1Ex(x,y,z,t)+d2Ey(x,y,z,t)+d3Ez(x,y,z,t)+\frac{\partial}{\partial x}(Ex(x,y,z,t))+\frac{\partial}{\partial y}(Ey(x,y,z,t))+\frac{\partial}{\partial z}(Ez(x,y,z,t))=0$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 3: 2: 1: </pre> <div>$Curl(E)=\frac{1}{c}Der(E,t)=\frac{4\pi}{c}J$</div> <div>$\left[\begin{array}{l} (d2Bz(x,y,z,t)-d3By(x,y,z,t))\cdot c \\ (d3Bx(x,y,z,t)-d1Bz(x,y,z,t))\cdot c \\ (d1By(x,y,z,t)-d2Bx(x,y,z,t))\cdot c \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>
Mexpand: expand equations (3.2s)	<pre> 2: 1: </pre> <div>$\left[\begin{array}{l} \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (x(t)) \right) m = F_x \\ \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (y(t)) \right) m = F_y \\ \frac{\partial}{\partial t} \left(\frac{\partial}{\partial t} (z(t)) \right) m = F_z \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 8: 7: 6: 5: 4: 3: 2: 1: </pre> <div>$d1Ex(x,y,z,t)+d2Ey(x,y,z,t)+d3Ez(x,y,z,t)+\frac{\partial}{\partial x}(Ex(x,y,z,t))+\frac{\partial}{\partial y}(Ey(x,y,z,t))+\frac{\partial}{\partial z}(Ez(x,y,z,t))=0$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>
d→der: d1 etc. to derivatives (3s)	<pre> 2: 1: </pre> <div>H=d1dx(t)=Fx</div> <div>H=d1dy(t)=Fy</div> <div>H=d1dz(t)=Fz</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 8: 7: 6: 5: 4: 3: 2: 1: </pre> <div>$d1Ex(x,y,z,t)+d2Ey(x,y,z,t)+d3Ez(x,y,z,t)+\frac{\partial}{\partial x}(Ex(x,y,z,t))+\frac{\partial}{\partial y}(Ey(x,y,z,t))+\frac{\partial}{\partial z}(Ez(x,y,z,t))=0$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>
matrix equation evaluated and solved with Meval, Lname, Msolve	<pre> 9: 8: 7: 6: 5: 4: 3: 2: 1: </pre> <div>A1*x0=A2</div> <div>Ex21+2*x11=5 x22+2*x12=6 x21+4*x11=3</div> <div>Ex11 x12 x21 x22</div> <div>Ex11=-3 x12=-4 x21=4 x22=5</div> <div>Lname Msolve Dot Cross Der Div</div>	<pre> 5: 4: 3: 2: 1: </pre> <div>A1*x0=b1</div> <div>$\left[\begin{array}{l} x2+2*x1=1 \\ x2+4*x1=2 \end{array} \right]$</div> <div>$\left[\begin{array}{l} x1 \\ x2 \end{array} \right]$</div> <div>$\left[\begin{array}{l} x1=0 \\ x2=\frac{1}{2} \end{array} \right]$</div> <div>Lname Msolve Dot Cross Der Div</div>
linear system solved	<pre> 5: 4: 3: 2: 1: </pre> <div>Dot(v,v)</div> <div>$v_x^2+v_y^2+v_z^2$</div> <div>Cross(r,F)</div> <div>$\left[\begin{array}{l} F_z y - F_y z \\ z F_x - F_z x \\ F_y x - F_x y \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>Curl(B)</div> <div>$\left[\begin{array}{l} d2Bz(x,y,z,t)-d3By(x,y,z,t) \\ d3Bx(x,y,z,t)-d1Bz(x,y,z,t) \\ d1By(x,y,z,t)-d2Bx(x,y,z,t) \end{array} \right]$</div> <div>Det(A1)</div> <div>-2</div> <div>Lname Msolve Dot Cross Der Div</div>
Dot, Cross, Curl etc. in algebraic expressions	<pre> 5: 4: 3: 2: 1: </pre> <div>Dot(v,v)</div> <div>$v_x^2+v_y^2+v_z^2$</div> <div>Cross(r,F)</div> <div>$\left[\begin{array}{l} F_z y - F_y z \\ z F_x - F_z x \\ F_y x - F_x y \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>Curl(B)</div> <div>$\left[\begin{array}{l} d2Bz(x,y,z,t)-d3By(x,y,z,t) \\ d3Bx(x,y,z,t)-d1Bz(x,y,z,t) \\ d1By(x,y,z,t)-d2Bx(x,y,z,t) \end{array} \right]$</div> <div>Det(A1)</div> <div>-2</div> <div>Lname Msolve Dot Cross Der Div</div>
Mview: view equations (1s)	<pre> 5: 4: 3: 2: 1: </pre> <div>Curl(E)+1/c*Der(B,t)=0</div> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>TEXT</div> <div>OK</div>
Mpartfrac: Evaluate and partfrac equation (8.6s)	<pre> RAD XYZ DEG R= 'X' [HOME MATEQ] USR 6: 5: 4: 3: 2: 1: </pre> <div>Curl(E)+1/c*Der(B,t)=0</div> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>TEXT</div> <div>OK</div>
Mview: vertical view (1s)	<pre> RAD XYZ DEG R= 'X' [HOME MATEQ] USR 6: 5: 4: 3: 2: 1: </pre> <div>Curl(E)+1/c*Der(B,t)=0</div> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>Mview Examp Meval Mexpa Mpart d+der</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>$\left[\begin{array}{l} \frac{1}{c}d4Bx(x,y,z,t)-(d3Ey(x,y,z,t)-d2Ex(x,y,z,t))+\frac{1}{c}d4By(x,y,z,t)-d1Ex(x,y,z,t) \\ -d2Ex(x,y,z,t)+d1Ey(x,y,z,t)+\frac{1}{c}d4Bz(x,y,z,t) \end{array} \right]$</div> <div>TEXT</div> <div>OK</div>
HelpMATEQ: help	<pre> RAD XYZ DEG R= 'X' [HOME MATEQ] USR 6: 5: 4: 3: 2: 1: </pre> <div>MATEQ Matrix, vector, list eqns</div> <div>Mview view Matrix, list</div> <div>Examples choose box with</div> <div>examples in Exlist</div> <div>Meval 'A*B=E' + ['eq1'..]</div> <div>evaluates Matrix,vector eq</div> <div>into vector of eqs</div> <div>evaluates terms with</div> <div>Matrices, vectors, lists</div> <div>Mexpand 'A*B=E' + ['eq1'..]</div> <div>evaluates and expands</div> <div>Mpartfrac 'A*B=E' + ['eq1'..]</div> <div>evaluates and PARTFRAC</div> <div>Matrix,vector eq</div> <div>d+der 'd1F(x)' + '3d2F(x)'</div> <div>Works for d1..d3</div> <div>Lname ['eq1'..] + ['vars']</div> <div>Msolve ['eq1'..] + ['vars']</div> <div>[solution] of eqns</div> <div>with MEQ Meval Lname</div> <div>Msolve you can solve</div> <div>GRAPH</div> <div>OK</div>	<pre> 6: 5: 4: 3: 2: 1: </pre> <div>MATEQ Matrix, vector, list eqns</div> <div>Mview view Matrix, list</div> <div>Examples choose box with</div> <div>examples in Exlist</div> <div>Meval 'A*B=E' + ['eq1'..]</div> <div>evaluates Matrix,vector eq</div> <div>into vector of eqs</div> <div>evaluates terms with</div> <div>Matrices, vectors, lists</div> <div>Mexpand 'A*B=E' + ['eq1'..]</div> <div>evaluates and expands</div> <div>Mpartfrac 'A*B=E' + ['eq1'..]</div> <div>evaluates and PARTFRAC</div> <div>Matrix,vector eq</div> <div>d+der 'd1F(x)' + '3d2F(x)'</div> <div>Works for d1..d3</div> <div>Lname ['eq1'..] + ['vars']</div> <div>Msolve ['eq1'..] + ['vars']</div> <div>[solution] of eqns</div> <div>with MEQ Meval Lname</div> <div>Msolve you can solve</div> <div>GRAPH</div> <div>OK</div>