Table of Contents

Matrix Algebra -- Cory Wolfe 1
Row Interchanges 2
Experimental Data 2
Vectors 2

Matrix Algebra -- Cory Wolfe

```
A = [2,4,2;9,1,4;6,8,7];
B = [1,3,4;0,1,6;2,1,2];
C1 = A+B; C2 = B+A; C = C1;
max(max(abs(C1-C2))) % Commutative
D1 = A*(B+C); D2 = A*B + A*C;
max(max(abs(D1-D2)))  % Distributive
E1 = A*B; E2 = B*A;
max(max(abs(E1-E2))) % Commutative Couterexample
Ainv = A^-1;
Ainv*A, A*Ainv
```

```
ans =

     0


ans =

     0


ans =

    64


ans =

    1.0000   -0.0000    0.0000
         0    1.0000    0.0000
         0    0.0000    1.0000


ans =

    1.0000         0    0.0000
         0    1.0000         0
    0.0000   -0.0000    1.0000
```

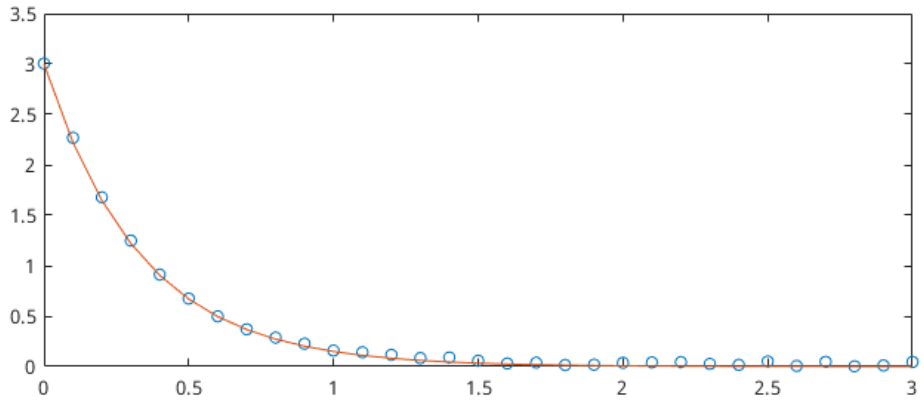
Row Interchanges

```
P = eye(3);
P([1,2],:) = P([2,1],:);
P([2,3],:) = P([3,2],:)
P*A
```

```
P =

     0     1     0
     0     0     1
     1     0     0


ans =

     9     1     4
     6     8     7
     2     4     2
```

Experimental Data

```
data = importdata('workshop2.txt');
data(:,1) = mod(data(:,1),20);
data(:,4) = data(:,2).*exp(-data(:,2).*data(:,1));
%plot(data(:,1),data(:,3),'o',data(:,1),data(:,4),'o')
figure(1)
i=5;irange=30;imin=(i-1)*100+1; imax = imin+irange;
plot(data(imin:imax,1),data(imin:imax,3),'o',...
    data(imin:imax,1),data(imin:imax,4))
```



Vectors

```
a = [ 1,0,0]';
theta = 45; P2 = [cosd(theta),-sind(theta),0; ...
```

```
    sind(theta),cosd(theta),0;0,0,0];
b45 = P2*a
theta = 90; P2 = [cosd(theta),-sind(theta),0; ...
    sind(theta),cosd(theta),0;0,0,0];
b90 = P2*a
a'*b45
sqrt(b45'*b45)
dot(a,b90)
c = cross(a,b45)
cmag = norm(c,2)
alpha = asind(norm(c,2)/(norm(a,2)*norm(b45,2)))


b45 =

    0.7071
    0.7071
         0


b90 =

     0
     1
     0


ans =

    0.7071


ans =

    1.0000


ans =

     0


c =

         0
         0
    0.7071


cmag =

    0.7071
```

```
alpha =

   45.0000
```

Published with MATLAB® R2016a