Array Reshape, Repeat and Expand Examples

back to Fan's Intro Math for Econ, Matlab Examples, or Dynamic Asset Repositories

Basic Examples of Reshape

```
a = [1,2,3,4,5,6]';
b = reshape(a, [3,2])
```

```
b = 3×2
     1     4
     2     5
     3     6
```

```
b(:)
```

```
ans = 6×1
     1
     2
     3
     4
     5
     6
```

```
a = [1,2,3;4,5,6;7,8,9;10,11,12]'
```

```
a = 3×4
     1     4     7    10
     2     5     8    11
     3     6     9    12
```

```
b = reshape(a, [6,2])
```

```
b = 6×2
     1     7
     2     8
     3     9
     4    10
     5    11
     6    12
```

Stack Two Matrix of Equal Column Count Together

```
a = [1,2;3,4];
a_stacked = [a;a;a];
disp(a_stacked);
```

```
     1     2
     3     4
     1     2
     3     4
     1     2
     3     4
```

Repeat/Duplicate Matrix Downwards

There is a 2 by 3 matrix, to be repeated 4 times, downwards. This is useful for replicating data matrix for say counterfactual purposes.

Below, we have two ways of repeating a matrix downwards. Copy as whole, or copy row by row.

```
row_count = 2;
col_count = 3;
repeat_mat_count = 2;

data_vec = 1:(row_count*col_count);
searchMatrix = reshape(data_vec,row_count,col_count);

% To repeat matrix downwards
rep_rows_idx = [1:row_count]'*ones(1,repeat_mat_count);
rep_rows_idx = rep_rows_idx(:);

rep_cols_idx = [1:col_count];
rep_cols_idx = rep_cols_idx(:);

searchMatrixRep_stack = searchMatrix(rep_rows_idx, rep_cols_idx);

% To insert repeated rows following original rows
rep_rows_idx = ([1:row_count]'*ones(1,repeat_mat_count))';
rep_rows_idx = rep_rows_idx(:);

searchMatrixRep_dup = searchMatrix(rep_rows_idx, rep_cols_idx);

disp(searchMatrix)
```

```
     1     3     5
     2     4     6
```

```
disp(searchMatrixRep_stack)
```

```
     1     3     5
     2     4     6
     1     3     5
     2     4     6
```

```
disp(searchMatrixRep_dup)
```

```
     1     3     5
     1     3     5
     2     4     6
     2     4     6
```

Index Dimension Transform

it_inner_fin = 5; it_outter_fin = 3;

it_inner_cur = it_outter_fin it_outter_cur = it_inner_fin

ar_it_cols_idx = 1:1:(it_inner_fin*it_outter_fin) ar_it_cols_inner_dim = repmat(1:it_inner_cur, [it_outter_cur, 1]) ar_it_cols_inner_dim(:)'

mt_it_cols_idx = reshape(ar_it_cols_idx, [it_inner_cur, it_outter_cur])' mt_it_cols_idx(:)'

```
it_inner_fin = 5;
it_outter_fin = 3;

ar_it_cols_idx = 1:1:(it_inner_fin*it_outter_fin)
```

```
ar_it_cols_idx = 1×15
     1     2     3     4     5     6     7     8     9    10    11    12    13 ···
```

```
mt_it_cols_idx = reshape(ar_it_cols_idx, [it_outter_fin, it_inner_fin])'
```

```
mt_it_cols_idx = 5×3
     1     2     3
     4     5     6
     7     8     9
    10    11    12
    13    14    15
```

```
mt_it_cols_idx(:)'
```

```
ans = 1×15
     1     4     7    10    13     2     5     8    11    14     3     6     9 ···
```