PS2 Question 5

define an arbitrary matrix

```
A = [[1,3,3,2]; [2, 6, 9, 5]; [-1, -3, 3, 0]];
fundamental_subspaces(A);
```

```
E_r =

    1.0000    3.0000         0    1.0000
         0         0    1.0000    0.3333
         0         0         0         0


row_space =

    1.0000         0
    3.0000         0
         0    1.0000
    1.0000    0.3333


column_space =

     1     3
     2     9
    -1     3


left_null_space =

    1.0000
   -0.4000
    0.2000


right_null_space_numerical =

    0.9504   -0.0702
   -0.3102   -0.2794
    0.0066   -0.3028
   -0.0197    0.9085


right_null_space =

   -3.0000   -1.0000
    1.0000         0
         0   -0.3333
         0    1.0000
```

Validating via PS1 Question 4

```
B = [[0 1 2 3 4]; [0 1 2 4 6]; [0 0 0 1 2]];
fundamental_subspaces(A);
```

```
E_r =

    1.0000    3.0000         0    1.0000
         0         0    1.0000    0.3333
         0         0         0         0


row_space =

    1.0000         0
    3.0000         0
         0    1.0000
    1.0000    0.3333


column_space =

     1     3
     2     9
    -1     3


left_null_space =

    1.0000
   -0.4000
    0.2000


right_null_space_numerical =

    0.9504   -0.0702
   -0.3102   -0.2794
    0.0066   -0.3028
   -0.0197    0.9085


right_null_space =

   -3.0000   -1.0000
    1.0000         0
         0   -0.3333
         0    1.0000
```

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