In [69]:
```python
import numpy as np
```

In [70]:
```python
import matplotlib.pyplot as plt
```

In [71]:
```python
%matplotlib inline
```

In [72]:
```python
from PIL import Image
```

In [73]:
```python
horse_img = Image.open(r'C:\Users\Vishwapriya\Downloads\raj.jpeg')
```

In [74]:
```python
horse_img
```

Out[74]:

In [75]:
```python
type(horse_img)
```

Out[75]: PIL.JpegImagePlugin.JpegImageFile

In [76]:
```python
horse_arr = np.asarray(horse_img)
horse_arr
```

```
Out[76]:  array([[[245, 245, 245],
                  [182, 182, 182],
                  [217, 217, 217],
                  ...,
                  [204, 204, 202],
                  [180, 180, 178],
                  [244, 244, 242]],

                 [[171, 171, 171],
                  [ 21,  21,  21],
                  [  4,   4,   4],
                  ...,
                  [  0,   0,   0],
                  [  5,   5,   3],
                  [154, 154, 152]],

                 [[197, 197, 197],
                  [  7,   7,   7],
                  [  0,   0,   0],
                  ...,
                  [  9,   9,   7],
                  [  1,   1,   0],
                  [185, 185, 183]],

                 ...,

                 [[202, 202, 202],
                  [  2,   2,   2],
                  [  2,   2,   2],
                  ...,
                  [  2,   2,   2],
                  [  0,   0,   0],
                  [183, 183, 183]],

                 [[202, 202, 202],
                  [  2,   2,   2],
                  [  2,   2,   2],
                  ...,
                  [  2,   2,   2],
                  [  0,   0,   0],
                  [183, 183, 183]],

                 [[228, 228, 228],
                  [178, 178, 178],
                  [181, 181, 181],
                  ...,
                  [185, 185, 185],
                  [179, 179, 179],
                  [225, 225, 225]]], dtype=uint8)
```

```
In [77]:  type(horse_arr)
```

```
Out[77]:  numpy.ndarray
```

In [78]:
```python
plt.imshow(horse_arr)
plt.show()
```


In [79]:
```python
horse_red = horse_arr.copy()
horse_red
```

```
Out[79]:  array([[[245, 245, 245],
                  [182, 182, 182],
                  [217, 217, 217],
                  ...,
                  [204, 204, 202],
                  [180, 180, 178],
                  [244, 244, 242]],

                 [[171, 171, 171],
                  [ 21,  21,  21],
                  [  4,   4,   4],
                  ...,
                  [  0,   0,   0],
                  [  5,   5,   3],
                  [154, 154, 152]],

                 [[197, 197, 197],
                  [  7,   7,   7],
                  [  0,   0,   0],
                  ...,
                  [  9,   9,   7],
                  [  1,   1,   0],
                  [185, 185, 183]],

                 ...,

                 [[202, 202, 202],
                  [  2,   2,   2],
                  [  2,   2,   2],
                  ...,
                  [  2,   2,   2],
                  [  0,   0,   0],
                  [183, 183, 183]],

                 [[202, 202, 202],
                  [  2,   2,   2],
                  [  2,   2,   2],
                  ...,
                  [  2,   2,   2],
                  [  0,   0,   0],
                  [183, 183, 183]],

                 [[228, 228, 228],
                  [178, 178, 178],
                  [181, 181, 181],
                  ...,
                  [185, 185, 185],
                  [179, 179, 179],
                  [225, 225, 225]]], dtype=uint8)
```

```
In [80]:  horse_arr == horse_red
```

```
Out[80]:  array([[[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]],

                 [[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]],

                 [[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]],

                 ...,

                 [[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]],

                 [[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]],

                 [[ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True],
                  ...,
                  [ True,    True,    True],
                  [ True,    True,    True],
                  [ True,    True,    True]]])
```

```
In [81]:  plt.imshow(horse_red)
          horse_red.shape
```

```
Out[81]:  (225, 224, 3)
```

In [82]:
```python
plt.imshow(horse_red[:,:,0])
```

Out[82]:   <matplotlib.image.AxesImage at 0x2be397e9d60>

In [83]:
```python
horse_red[:,:,0]
```
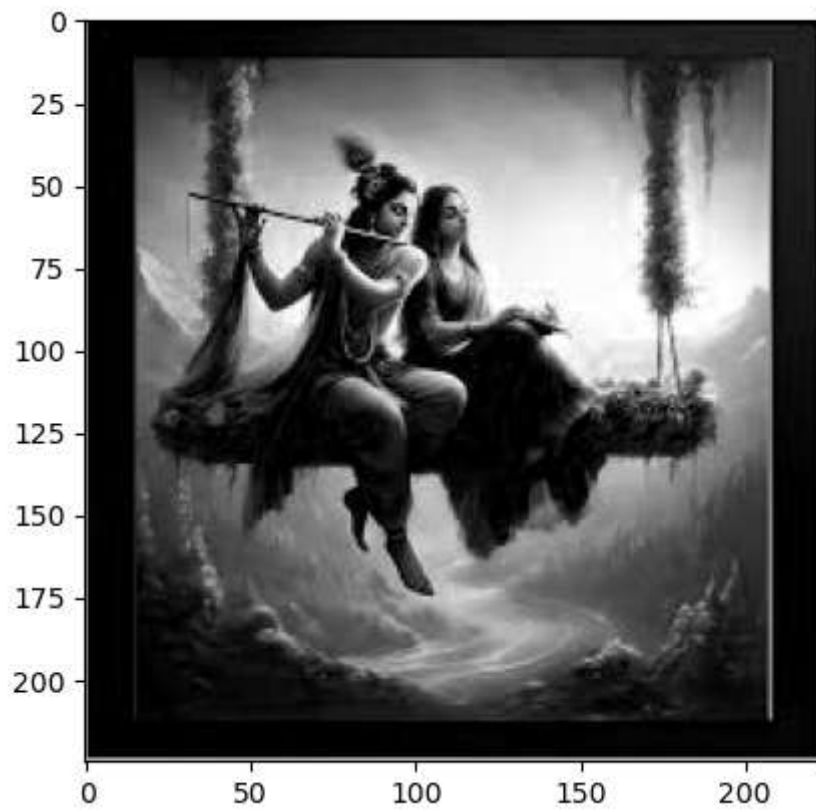
Out[83]:
```
array([[245, 182, 217, ..., 204, 180, 244],
       [171,  21,   4, ...,   0,   5, 154],
       [197,   7,   0, ...,   9,   1, 185],
       ...,
       [202,   2,   2, ...,   2,   0, 183],
       [202,   2,   2, ...,   2,   0, 183],
       [228, 178, 181, ..., 185, 179, 225]], dtype=uint8)
```
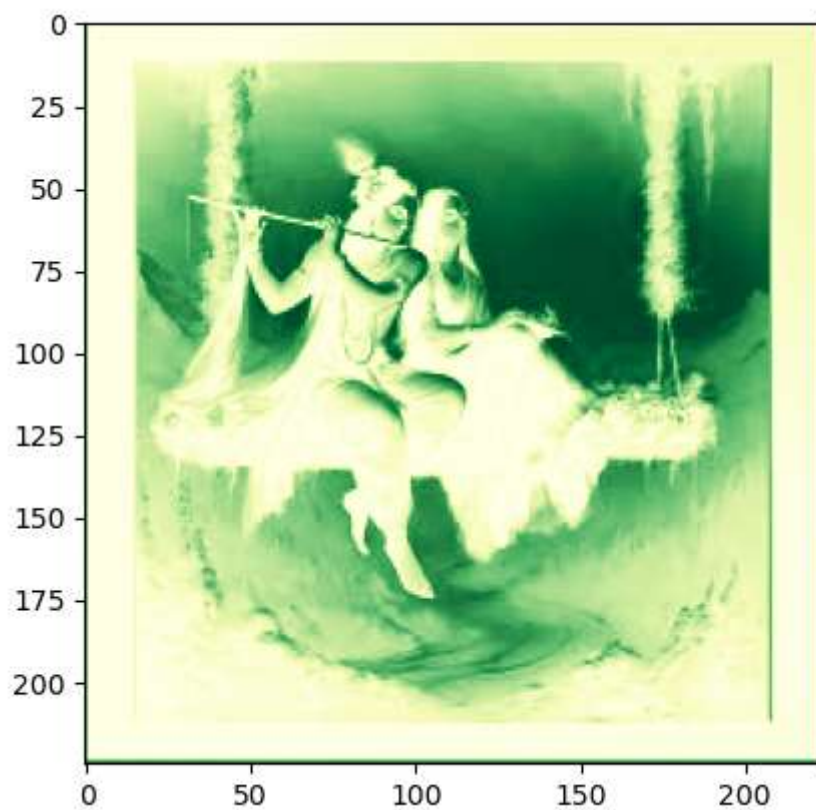
In [84]:
```python
plt.imshow(horse_red[:,:,0], cmap='Greys')
plt.imshow(horse_red)   # or whatever your array is called
plt.show()
```


In [85]:
```python
plt.imshow(horse_red[:,:,1], cmap='grey')
plt.show()
```

In [86]:
```python
plt.imshow(horse_red[:,:,1], cmap='YlGn')
plt.show()
```


In [87]:
```python
horse_red[:,:,0]
```

```
Out[87]: array([[245, 182, 217, ..., 204, 180, 244],
                 [171,  21,   4, ...,   0,   5, 154],
                 [197,   7,   0, ...,   9,   1, 185],
                 ...,
                 [202,   2,   2, ...,   2,   0, 183],
                 [202,   2,   2, ...,   2,   0, 183],
                 [228, 178, 181, ..., 185, 179, 225]], dtype=uint8)
```

```
In [88]: horse_red[:,:,1]
```

```
Out[88]: array([[245, 182, 217, ..., 204, 180, 244],
                 [171,  21,   4, ...,   0,   5, 154],
                 [197,   7,   0, ...,   9,   1, 185],
                 ...,
                 [202,   2,   2, ...,   2,   0, 183],
                 [202,   2,   2, ...,   2,   0, 183],
                 [228, 178, 181, ..., 185, 179, 225]], dtype=uint8)
```

```
In [89]: horse_red[:,:,2]
```

```
Out[89]: array([[245, 182, 217, ..., 202, 178, 242],
                 [171,  21,   4, ...,   0,   3, 152],
                 [197,   7,   0, ...,   7,   0, 183],
                 ...,
                 [202,   2,   2, ...,   2,   0, 183],
                 [202,   2,   2, ...,   2,   0, 183],
                 [228, 178, 181, ..., 185, 179, 225]], dtype=uint8)
```
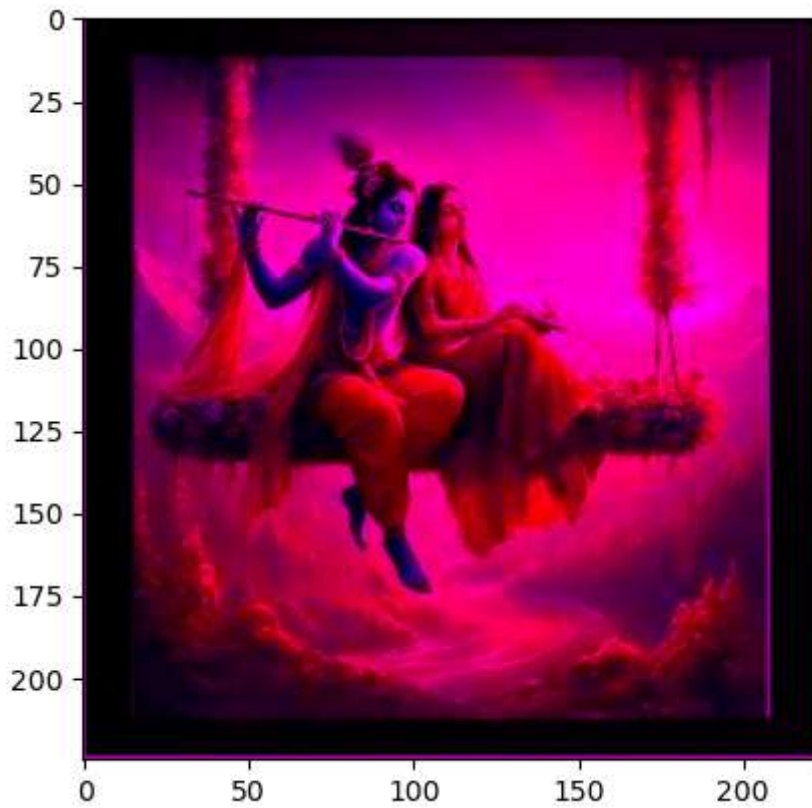
```
In [93]: horse_red[:,:,1] = 0
```

```
In [92]: horse_red[:,:,1]
```

```
Out[92]: array([[0, 0, 0, ..., 0, 0, 0],
                 [0, 0, 0, ..., 0, 0, 0],
                 [0, 0, 0, ..., 0, 0, 0],
                 ...,
                 [0, 0, 0, ..., 0, 0, 0],
                 [0, 0, 0, ..., 0, 0, 0],
                 [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [95]: plt.imshow(horse_red)
         plt.show()
```

In [96]: `horse_red[:,:,2]`
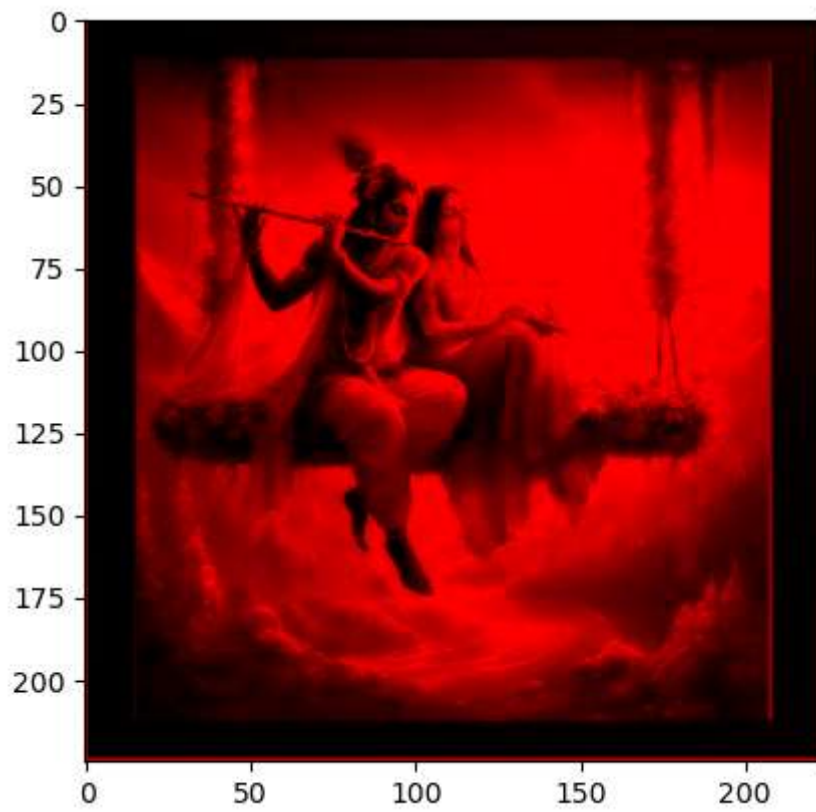
Out[96]:
```
array([[245, 182, 217,  ..., 202, 178, 242],
       [171,  21,   4,  ...,   0,   3, 152],
       [197,   7,   0,  ...,   7,   0, 183],
       ...,
       [202,   2,   2,  ...,   2,   0, 183],
       [202,   2,   2,  ...,   2,   0, 183],
       [228, 178, 181,  ..., 185, 179, 225]], dtype=uint8)
```

In [98]: `horse_red[:,:,2]  = 0`

In [99]: `horse_red[:,:,2]`

Out[99]:
```
array([[0, 0, 0,  ..., 0, 0, 0],
       [0, 0, 0,  ..., 0, 0, 0],
       [0, 0, 0,  ..., 0, 0, 0],
       ...,
       [0, 0, 0,  ..., 0, 0, 0],
       [0, 0, 0,  ..., 0, 0, 0],
       [0, 0, 0,  ..., 0, 0, 0]], dtype=uint8)
```

In [100…]:
```
plt.imshow(horse_red)
plt.show()
```

In [101…   horse_arr

```
Out[101…   array([[[245, 245, 245],
               [182, 182, 182],
               [217, 217, 217],
               ...,
               [204, 204, 202],
               [180, 180, 178],
               [244, 244, 242]],

              [[171, 171, 171],
               [ 21,  21,  21],
               [  4,   4,   4],
               ...,
               [  0,   0,   0],
               [  5,   5,   3],
               [154, 154, 152]],

              [[197, 197, 197],
               [  7,   7,   7],
               [  0,   0,   0],
               ...,
               [  9,   9,   7],
               [  1,   1,   0],
               [185, 185, 183]],

              ...,

              [[202, 202, 202],
               [  2,   2,   2],
               [  2,   2,   2],
               ...,
               [  2,   2,   2],
               [  0,   0,   0],
               [183, 183, 183]],

              [[202, 202, 202],
               [  2,   2,   2],
               [  2,   2,   2],
               ...,
               [  2,   2,   2],
               [  0,   0,   0],
               [183, 183, 183]],

              [[228, 228, 228],
               [178, 178, 178],
               [181, 181, 181],
               ...,
               [185, 185, 185],
               [179, 179, 179],
               [225, 225, 225]]], dtype=uint8)
```

```
In [102…   horse_red
```

```
Out[102…   array([[[245,    0,    0],
                   [182,    0,    0],
                   [217,    0,    0],
                   ...,
                   [204,    0,    0],
                   [180,    0,    0],
                   [244,    0,    0]],

                  [[171,    0,    0],
                   [ 21,    0,    0],
                   [  4,    0,    0],
                   ...,
                   [  0,    0,    0],
                   [  5,    0,    0],
                   [154,    0,    0]],

                  [[197,    0,    0],
                   [  7,    0,    0],
                   [  0,    0,    0],
                   ...,
                   [  9,    0,    0],
                   [  1,    0,    0],
                   [185,    0,    0]],

                  ...,

                  [[202,    0,    0],
                   [  2,    0,    0],
                   [  2,    0,    0],
                   ...,
                   [  2,    0,    0],
                   [  0,    0,    0],
                   [183,    0,    0]],

                  [[202,    0,    0],
                   [  2,    0,    0],
                   [  2,    0,    0],
                   ...,
                   [  2,    0,    0],
                   [  0,    0,    0],
                   [183,    0,    0]],

                  [[228,    0,    0],
                   [178,    0,    0],
                   [181,    0,    0],
                   ...,
                   [185,    0,    0],
                   [179,    0,    0],
                   [225,    0,    0]]], dtype=uint8)
```

```
In [103…   horse_red
```

```
Out[103…   array([[[245,    0,    0],
                   [182,    0,    0],
                   [217,    0,    0],
                   ...,
                   [204,    0,    0],
                   [180,    0,    0],
                   [244,    0,    0]],

                  [[171,    0,    0],
                   [ 21,    0,    0],
                   [  4,    0,    0],
                   ...,
                   [  0,    0,    0],
                   [  5,    0,    0],
                   [154,    0,    0]],

                  [[197,    0,    0],
                   [  7,    0,    0],
                   [  0,    0,    0],
                   ...,
                   [  9,    0,    0],
                   [  1,    0,    0],
                   [185,    0,    0]],

                  ...,

                  [[202,    0,    0],
                   [  2,    0,    0],
                   [  2,    0,    0],
                   ...,
                   [  2,    0,    0],
                   [  0,    0,    0],
                   [183,    0,    0]],

                  [[202,    0,    0],
                   [  2,    0,    0],
                   [  2,    0,    0],
                   ...,
                   [  2,    0,    0],
                   [  0,    0,    0],
                   [183,    0,    0]],

                  [[228,    0,    0],
                   [178,    0,    0],
                   [181,    0,    0],
                   ...,
                   [185,    0,    0],
                   [179,    0,    0],
                   [225,    0,    0]]], dtype=uint8)
```

```
In [105…   arr1 = np.asarray(horse_img)
           arr1
```

```
Out[105…   array([[[245, 245, 245],
                   [182, 182, 182],
                   [217, 217, 217],
                   ...,
                   [204, 204, 202],
                   [180, 180, 178],
                   [244, 244, 242]],

                  [[171, 171, 171],
                   [ 21,  21,  21],
                   [  4,   4,   4],
                   ...,
                   [  0,   0,   0],
                   [  5,   5,   3],
                   [154, 154, 152]],

                  [[197, 197, 197],
                   [  7,   7,   7],
                   [  0,   0,   0],
                   ...,
                   [  9,   9,   7],
                   [  1,   1,   0],
                   [185, 185, 183]],

                  ...,

                  [[202, 202, 202],
                   [  2,   2,   2],
                   [  2,   2,   2],
                   ...,
                   [  2,   2,   2],
                   [  0,   0,   0],
                   [183, 183, 183]],

                  [[202, 202, 202],
                   [  2,   2,   2],
                   [  2,   2,   2],
                   ...,
                   [  2,   2,   2],
                   [  0,   0,   0],
                   [183, 183, 183]],

                  [[228, 228, 228],
                   [178, 178, 178],
                   [181, 181, 181],
                   ...,
                   [185, 185, 185],
                   [179, 179, 179],
                   [225, 225, 225]]], dtype=uint8)
```

```python
In [106…   type(arr1)
```

```
Out[106…   numpy.ndarray
```

```python
In [107…   arr1.shape
```

Out[107…   (225, 224, 3)

In [109…
```python
plt.imshow(arr1)
plt.show()
```


In [111…
```python
horse_img1 = arr1.copy()
horse_img1
```

```
Out[111…  array([[[245, 245, 245],
                 [182, 182, 182],
                 [217, 217, 217],
                 ...,
                 [204, 204, 202],
                 [180, 180, 178],
                 [244, 244, 242]],

                [[171, 171, 171],
                 [ 21,  21,  21],
                 [  4,   4,   4],
                 ...,
                 [  0,   0,   0],
                 [  5,   5,   3],
                 [154, 154, 152]],

                [[197, 197, 197],
                 [  7,   7,   7],
                 [  0,   0,   0],
                 ...,
                 [  9,   9,   7],
                 [  1,   1,   0],
                 [185, 185, 183]],

                ...,

                [[202, 202, 202],
                 [  2,   2,   2],
                 [  2,   2,   2],
                 ...,
                 [  2,   2,   2],
                 [  0,   0,   0],
                 [183, 183, 183]],

                [[202, 202, 202],
                 [  2,   2,   2],
                 [  2,   2,   2],
                 ...,
                 [  2,   2,   2],
                 [  0,   0,   0],
                 [183, 183, 183]],

                [[228, 228, 228],
                 [178, 178, 178],
                 [181, 181, 181],
                 ...,
                 [185, 185, 185],
                 [179, 179, 179],
                 [225, 225, 225]]], dtype=uint8)
```
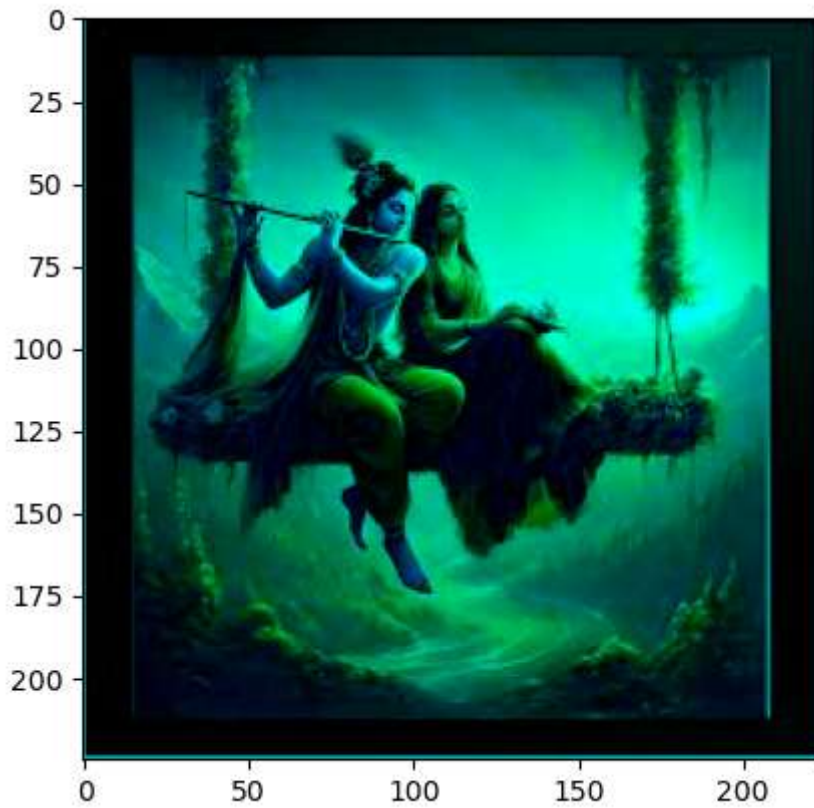
```
In [114…  horse_img1[:,:,0] = 0
          plt.imshow(horse_img1)
          plt.show()
```
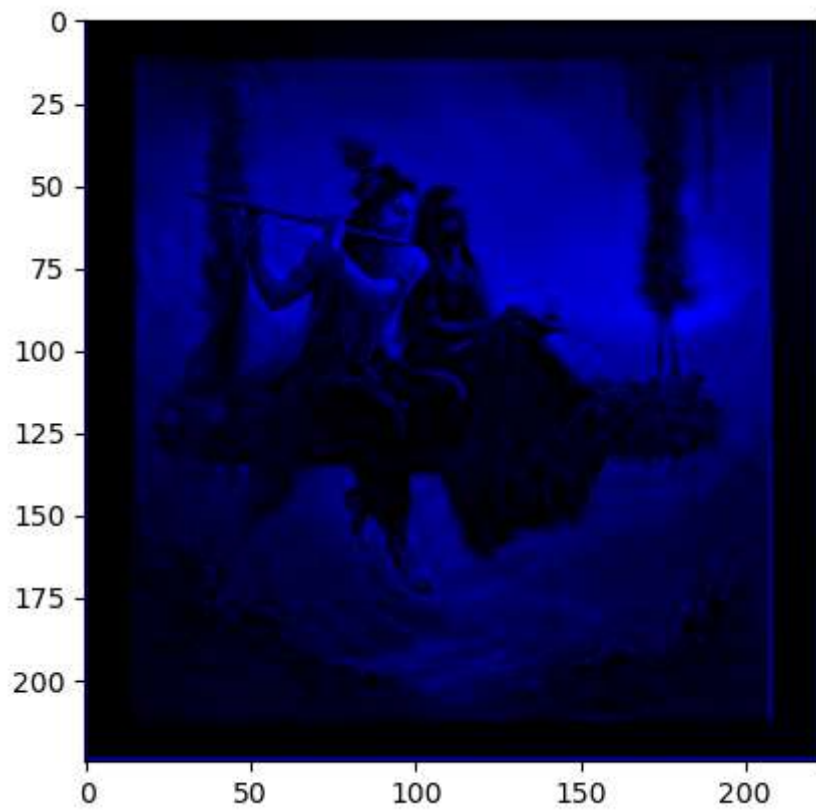
```
In [115…   horse_img1[:,:,1]
```

```
Out[115…   array([[245, 182, 217, ...,  204, 180, 244],
                  [171,  21,   4, ...,    0,   5, 154],
                  [197,   7,   0, ...,    9,   1, 185],
                  ...,
                  [202,   2,   2, ...,    2,   0, 183],
                  [202,   2,   2, ...,    2,   0, 183],
                  [228, 178, 181, ...,  185, 179, 225]], dtype=uint8)
```

```
In [116…   horse_img1[:,:,1] = 0
```

```
In [118…   plt.imshow(horse_img1)
           plt.show()
```

In [ ]:

In [ ]: