

```
In [253...]: import numpy as np
```

```
In [254...]: ones_arr=np.ones((5,5))
ones_arr
```

```
Out[254...]: array([[1., 1., 1., 1., 1.],
 [1., 1., 1., 1., 1.],
 [1., 1., 1., 1., 1.],
 [1., 1., 1., 1., 1.],
 [1., 1., 1., 1., 1.]])
```

```
In [255...]: ones_arr=np.ones((5,5),dtype=int)
ones_arr
```

```
Out[255...]: array([[1, 1, 1, 1, 1],
 [1, 1, 1, 1, 1],
 [1, 1, 1, 1, 1],
 [1, 1, 1, 1, 1],
 [1, 1, 1, 1, 1]])
```

```
In [256...]: ones_arr*255
```

```
Out[256...]: array([[255, 255, 255, 255, 255],
 [255, 255, 255, 255, 255],
 [255, 255, 255, 255, 255],
 [255, 255, 255, 255, 255],
 [255, 255, 255, 255, 255]])
```

```
In [257...]: zeros_arr=np.zeros((3,3),dtype=int)
```

```
In [258...]: zeros_arr
```

```
Out[258...]: array([[0, 0, 0],
 [0, 0, 0],
 [0, 0, 0]])
```

```
In [259...]: import matplotlib.pyplot as plt
```

```
In [355...]: # all the pictures keep inside the graph
%matplotlib inline
```

```
In [356...]: from PIL import Image #pil-- python image library
```

```
In [335...]: horse_img=Image.open(r"C:\Users\akank\Desktop\horse_img.jpg")
horse_img
```

Out[335...]



In [263...]: type(horse\_img)

Out[263...]: PIL.JpegImagePlugin.JpegImageFile

In [297...]: horse\_arr=np.asarray(horse\_img)

In [299...]: horse\_arr

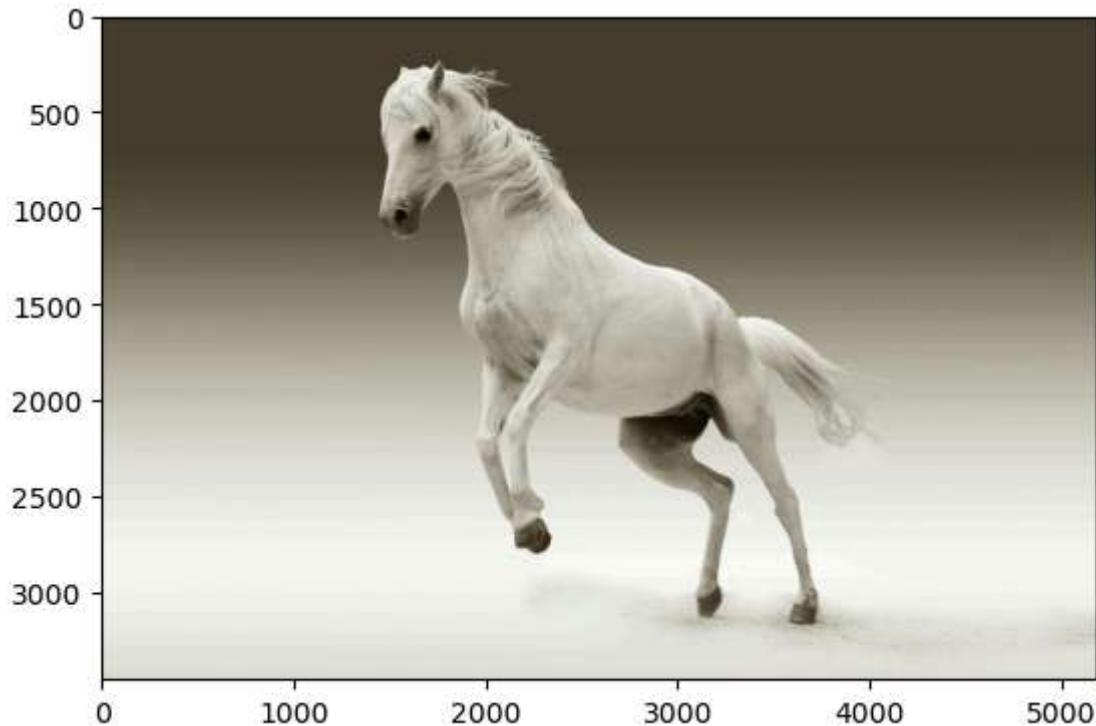
```
Out[299... array([[[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 76,  69,  51],  
   [ 76,  69,  51],  
   [ 77,  70,  52]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 75,  68,  50],  
   [ 75,  68,  50],  
   [ 76,  69,  51]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 73,  66,  48],  
   [ 74,  67,  49],  
   [ 74,  67,  49]],  
  
   ...,  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]]], dtype=uint8)
```

```
In [300... type(horse_arr)
```

```
Out[300... numpy.ndarray
```

```
In [301... horse_arr.shape
```

Out[301... (3456, 5184, 3)

In [305... plt.imshow(horse\_arr)  
plt.show()In [306... horse\_red=horse\_arr.copy()  
horse\_red

```
Out[306... array([[[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 76,  69,  51],  
   [ 76,  69,  51],  
   [ 77,  70,  52]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 75,  68,  50],  
   [ 75,  68,  50],  
   [ 76,  69,  51]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 73,  66,  48],  
   [ 74,  67,  49],  
   [ 74,  67,  49]],  
  
   ...,  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]]], dtype=uint8)
```

```
In [307... horse_img==horse_red
```

```
Out[307... 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]],

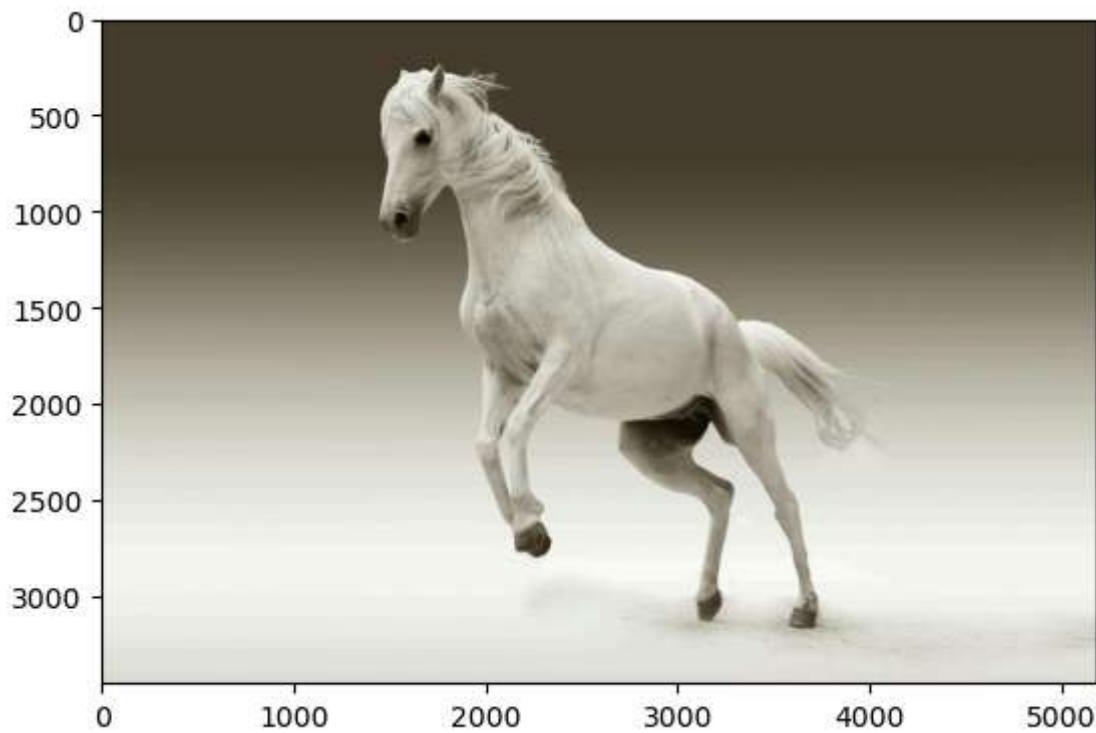
   ...,

   [[ 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 [308... plt.imshow(horse_red)
plt.show()
```



```
In [309]: horse_red.shape
```

```
Out[309]: (3456, 5184, 3)
```

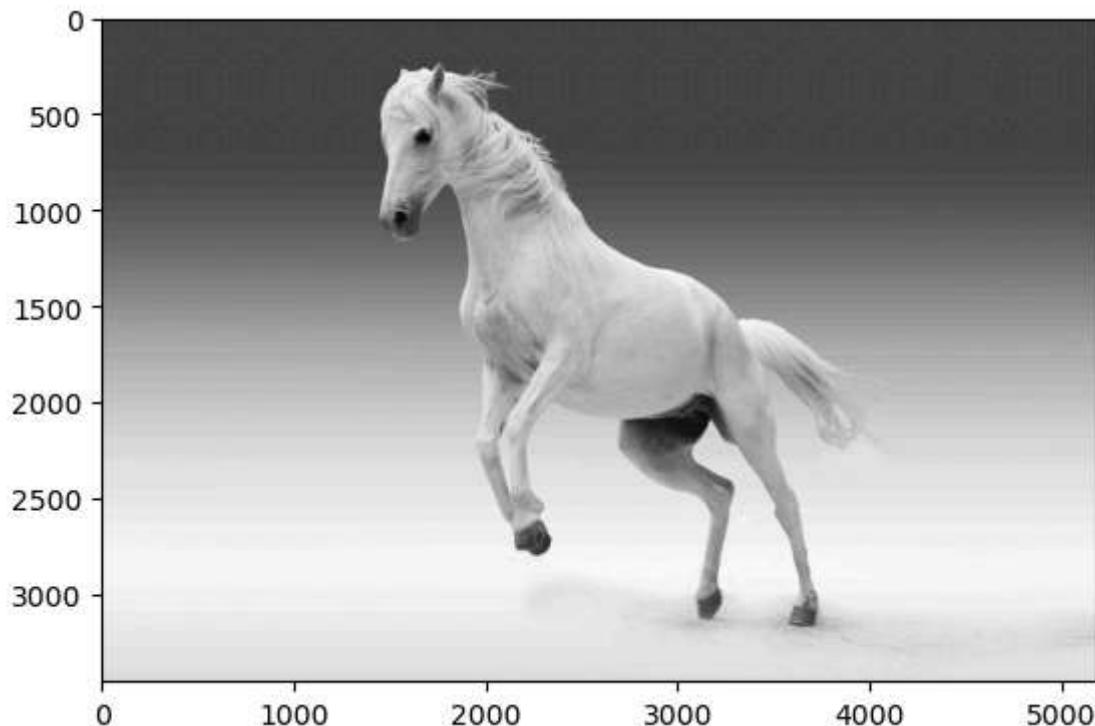
```
In [310]: plt.imshow(horse_red[:, :, 0])
plt.show()
```



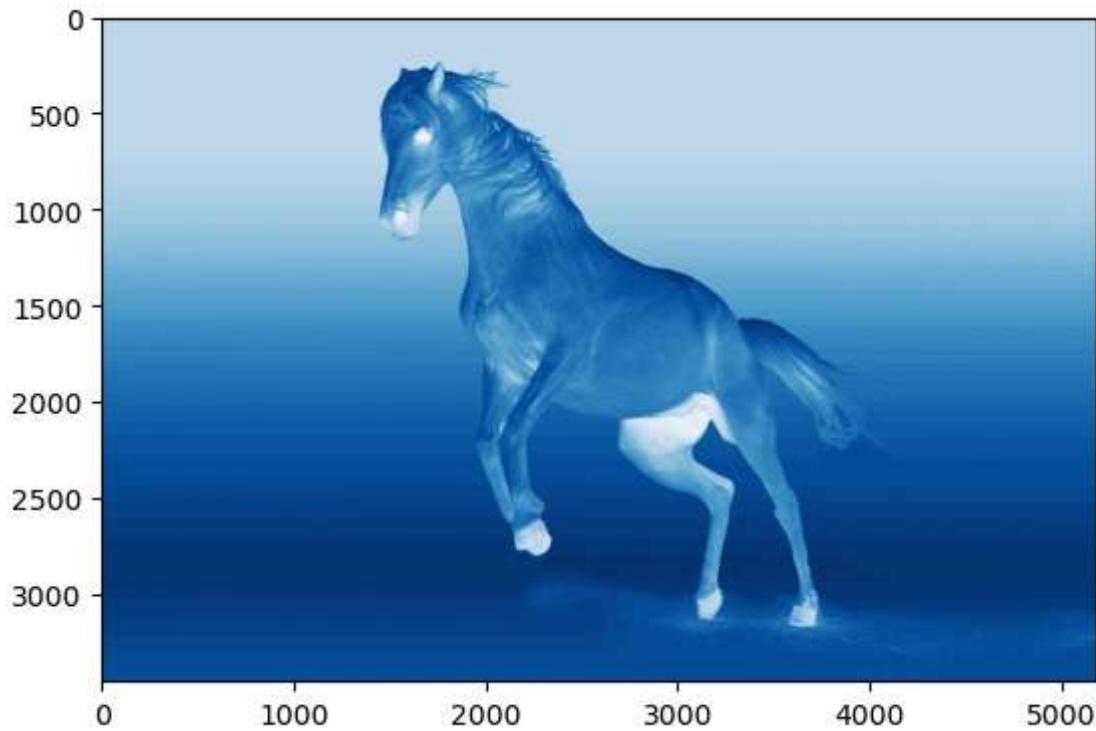
```
In [311]: horse_red[:, :, 0]
```

```
Out[311... array([[ 70,  70,  70, ...,  76,  76,  77],  
   [ 70,  70,  70, ...,  75,  75,  76],  
   [ 70,  70,  70, ...,  73,  74,  74],  
   ...,  
   [220, 220, 220, ..., 223, 223, 223],  
   [220, 220, 220, ..., 223, 223, 223],  
   [220, 220, 220, ..., 223, 223, 223]], dtype=uint8)
```

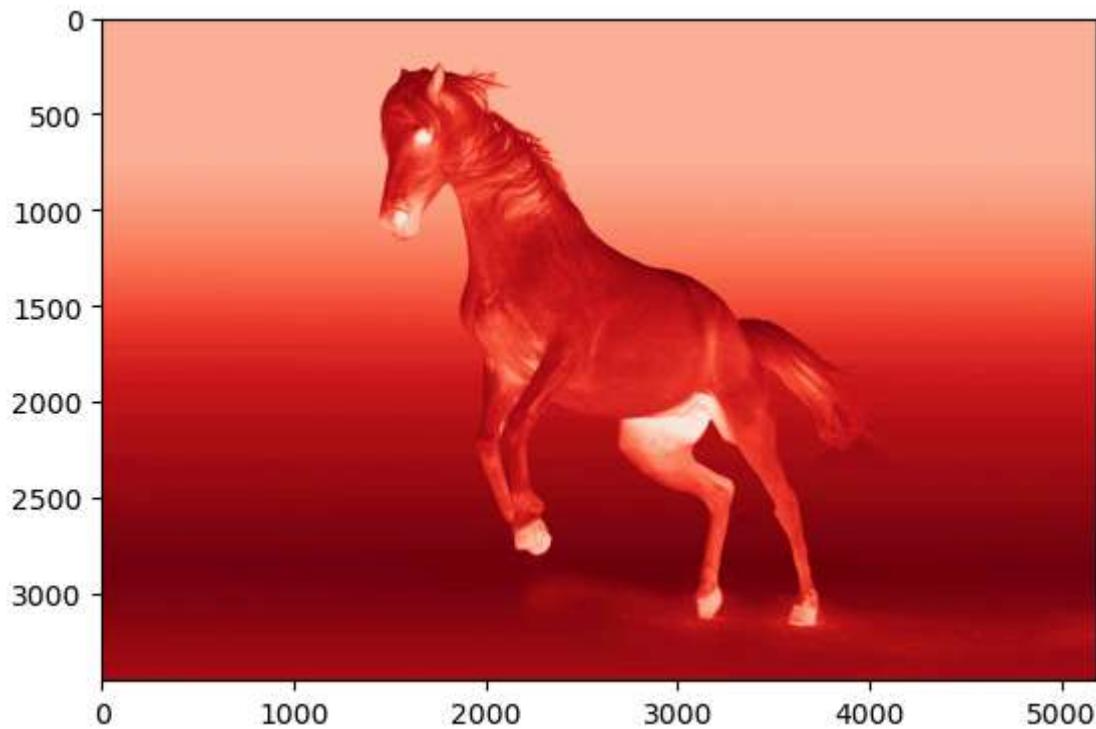
```
In [312... plt.imshow(horse_red[:, :, 0], cmap="gray")  
plt.show()
```



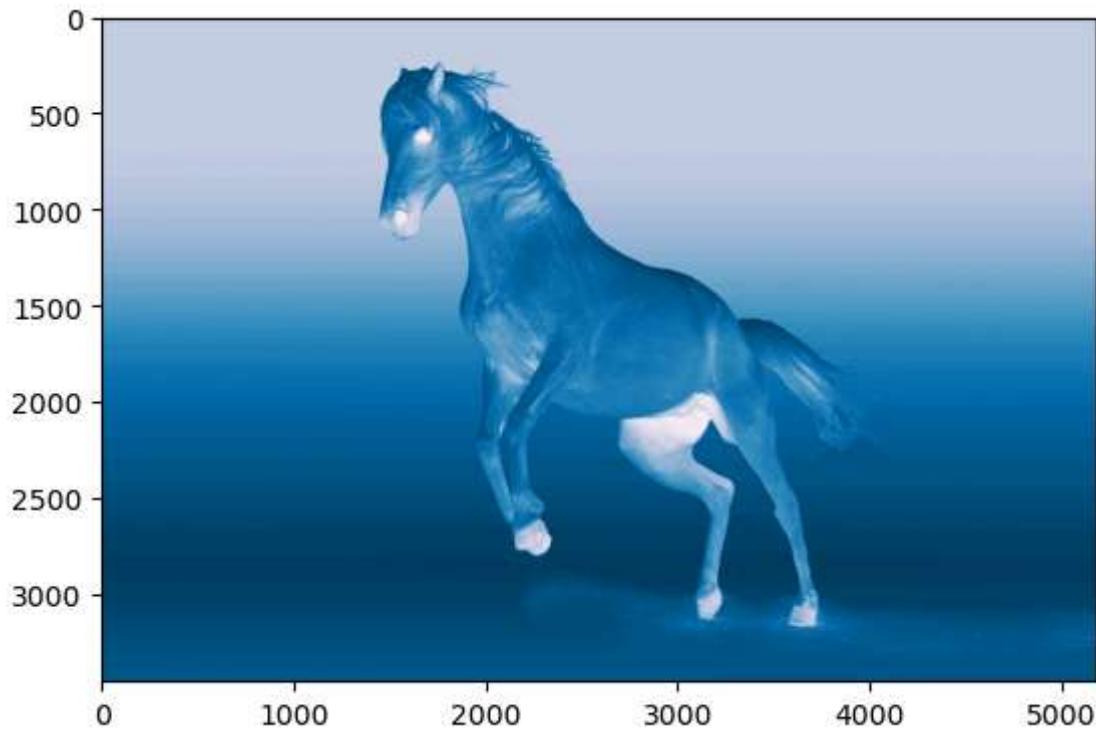
```
In [313... plt.imshow(horse_red[:, :, 0], cmap="Blues")  
plt.show()
```



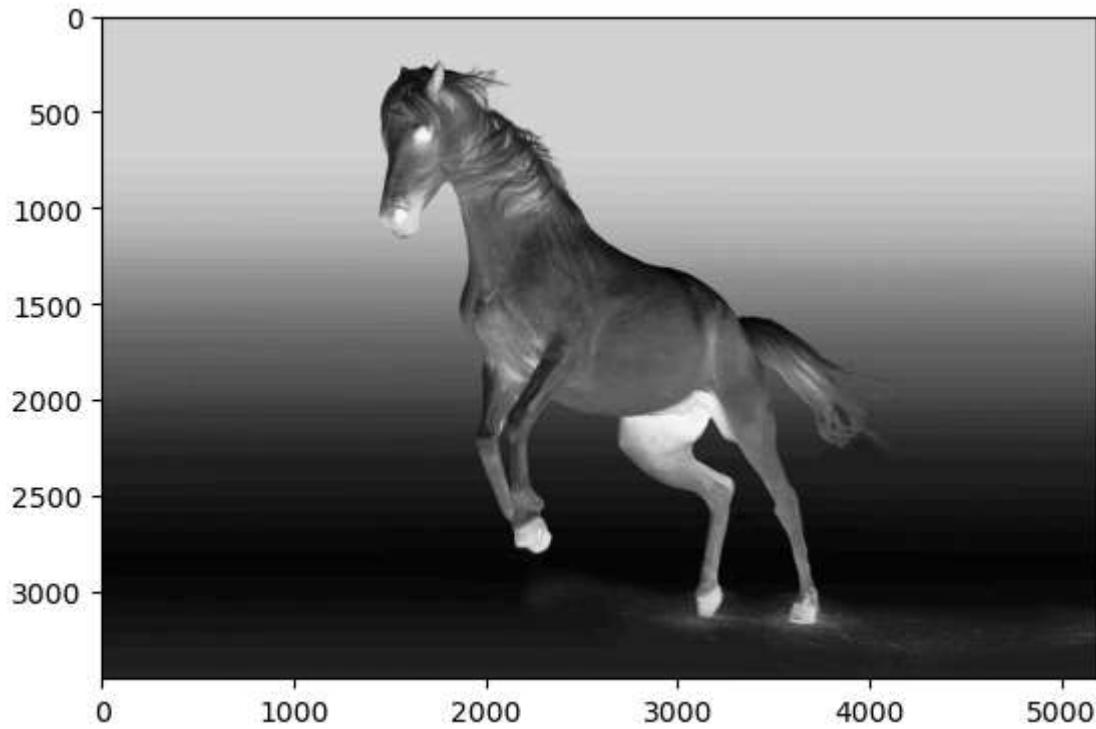
```
In [314]:  
plt.imshow(horse_red[:, :, 0], cmap="Reds")  
plt.show()
```



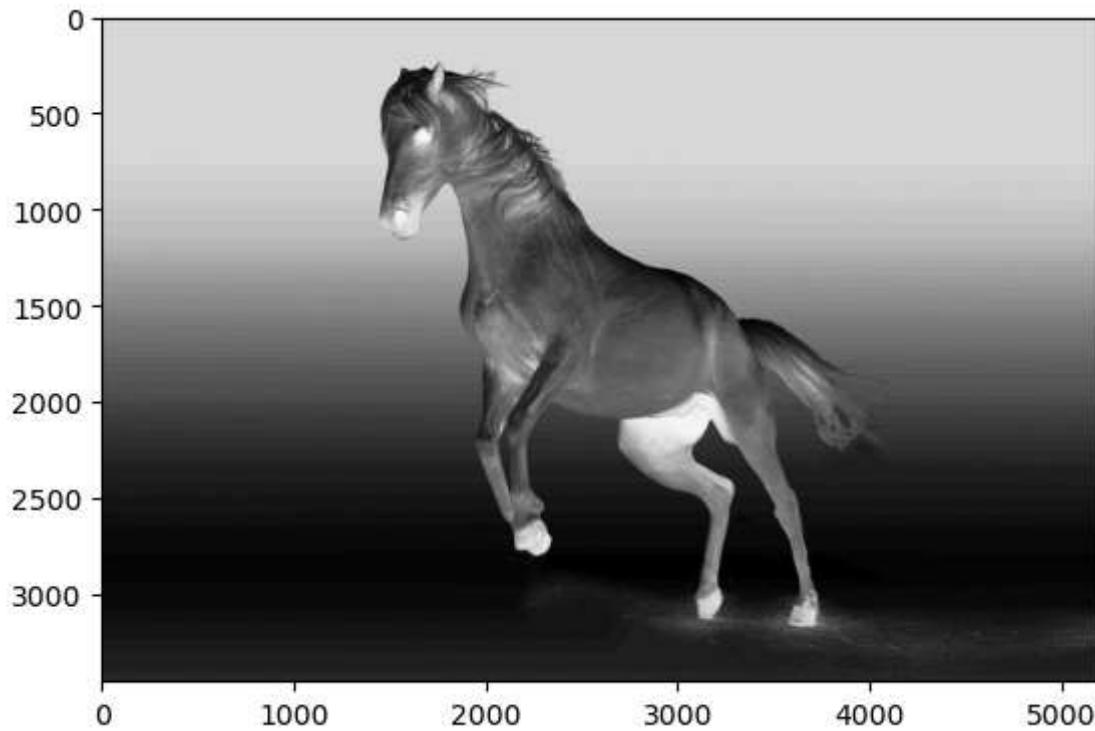
```
In [315]:  
plt.imshow(horse_red[:, :, 0], cmap="PuBu")  
plt.show()
```



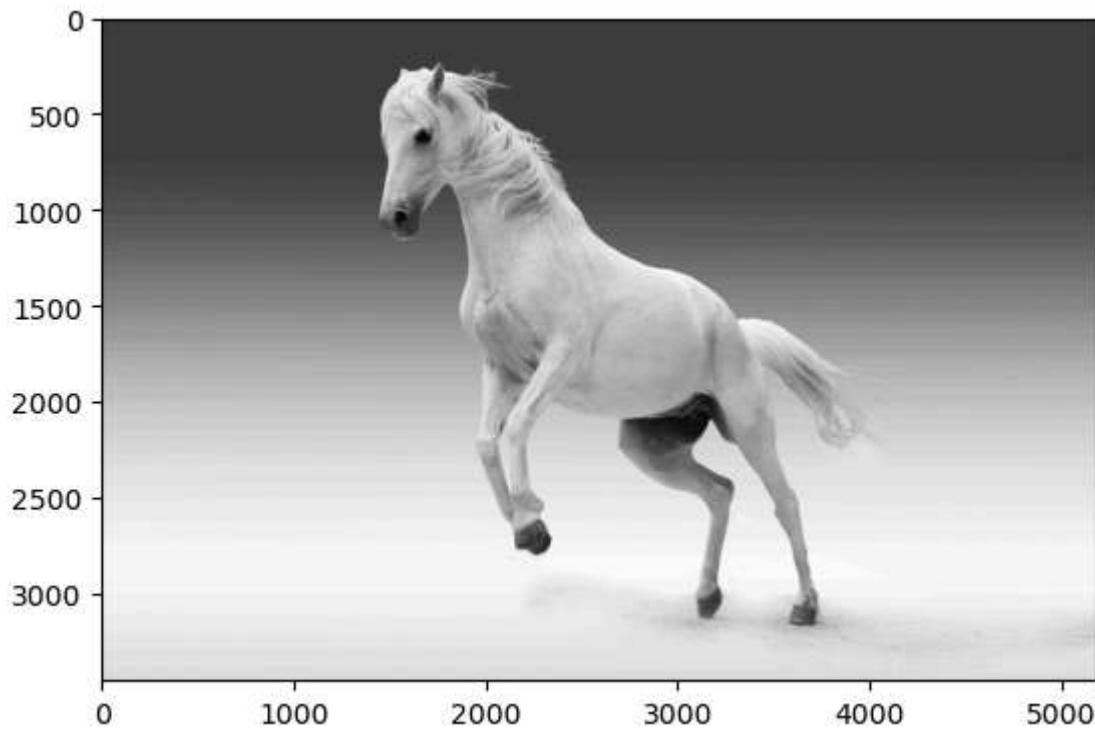
```
In [316]:  
plt.imshow(horse_red[:, :, 0], cmap="Greys")  
plt.show()
```



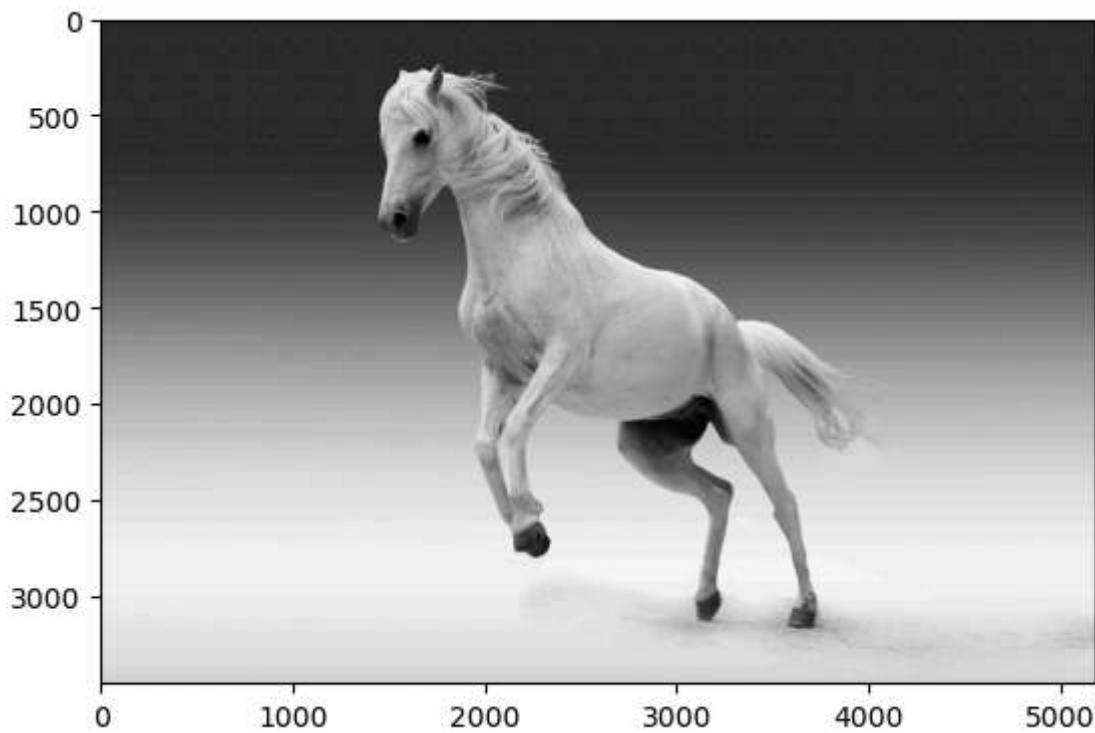
```
In [317]:  
plt.imshow(horse_red[:, :, 1], cmap="Greys")  
plt.show()
```



```
In [318]:  
plt.imshow(horse_red[:, :, 1], cmap="gray")  
plt.show()
```



```
In [319]:  
plt.imshow(horse_red[:, :, 2], cmap="grey")  
plt.show()
```



```
In [320]: horse_red[:, :, 0]
```

```
Out[320]: array([[ 70,  70,  70, ...,  76,  76,  77],
   [ 70,  70,  70, ...,  75,  75,  76],
   [ 70,  70,  70, ...,  73,  74,  74],
   ...,
   [220, 220, 220, ..., 223, 223, 223],
   [220, 220, 220, ..., 223, 223, 223],
   [220, 220, 220, ..., 223, 223, 223]], dtype=uint8)
```

```
In [321]: horse_red[:, :, 1]
```

```
Out[321]: array([[ 63,  63,  63, ...,  69,  69,  70],
   [ 63,  63,  63, ...,  68,  68,  69],
   [ 63,  63,  63, ...,  66,  67,  67],
   ...,
   [220, 220, 220, ..., 220, 220, 220],
   [220, 220, 220, ..., 220, 220, 220],
   [220, 220, 220, ..., 220, 220, 220]], dtype=uint8)
```

```
In [322]: horse_red[:, :, 2]
```

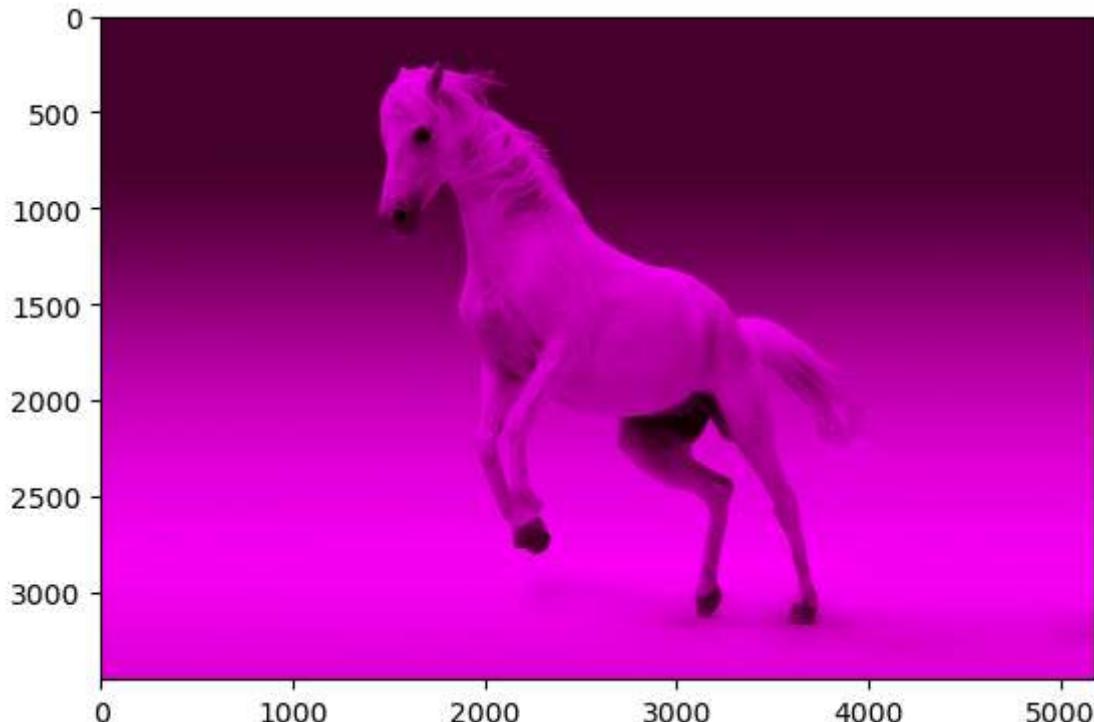
```
Out[322]: array([[ 45,  45,  45, ...,  51,  51,  52],
   [ 45,  45,  45, ...,  50,  50,  51],
   [ 45,  45,  45, ...,  48,  49,  49],
   ...,
   [212, 212, 212, ..., 213, 213, 213],
   [212, 212, 212, ..., 213, 213, 213],
   [212, 212, 212, ..., 213, 213, 213]], dtype=uint8)
```

```
In [323]: horse_red[:, :, 1] = 0
```

```
In [324... horse_red[:, :, 1]
```

```
Out[324... 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 [325... plt.imshow(horse_red)  
plt.show()
```



```
In [326... horse_red[:, :, 2]
```

```
Out[326... array([[ 45,  45,  45, ...,  51,  51,  52],  
   [ 45,  45,  45, ...,  50,  50,  51],  
   [ 45,  45,  45, ...,  48,  49,  49],  
   ...,  
   [212, 212, 212, ..., 213, 213, 213],  
   [212, 212, 212, ..., 213, 213, 213],  
   [212, 212, 212, ..., 213, 213, 213]], dtype=uint8)
```

```
In [327... horse_red[:, :, 2] = 0
```

```
In [328... horse_red[:, :, 2]
```

```
Out[328... 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 [329... plt.imshow(horse_red)  
plt.show()
```



```
In [330... horse_img
```

```
Out[330... array([[[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 76,  69,  51],  
   [ 76,  69,  51],  
   [ 77,  70,  52]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 75,  68,  50],  
   [ 75,  68,  50],  
   [ 76,  69,  51]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 73,  66,  48],  
   [ 74,  67,  49],  
   [ 74,  67,  49]],  
  
   ...,  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]]], dtype=uint8)
```

In [331... horse\_red

```
Out[331... array([[[ 70,  0,  0],
   [ 70,  0,  0],
   [ 70,  0,  0],
   ...,
   [ 76,  0,  0],
   [ 76,  0,  0],
   [ 77,  0,  0]],

   [[ 70,  0,  0],
   [ 70,  0,  0],
   [ 70,  0,  0],
   ...,
   [ 75,  0,  0],
   [ 75,  0,  0],
   [ 76,  0,  0]],

   [[ 70,  0,  0],
   [ 70,  0,  0],
   [ 70,  0,  0],
   ...,
   [ 73,  0,  0],
   [ 74,  0,  0],
   [ 74,  0,  0]],

   .....

   [[220,  0,  0],
   [220,  0,  0],
   [220,  0,  0],
   ...,
   [223,  0,  0],
   [223,  0,  0],
   [223,  0,  0]],

   [[220,  0,  0],
   [220,  0,  0],
   [220,  0,  0],
   ...,
   [223,  0,  0],
   [223,  0,  0],
   [223,  0,  0]],

   [[220,  0,  0],
   [220,  0,  0],
   [220,  0,  0],
   ...,
   [223,  0,  0],
   [223,  0,  0],
   [223,  0,  0]]], dtype=uint8)
```

```
In [340... horse_img
```

Out[340...]



In [342...]

```
arr1=np.asarray(horse_img)  
arr1
```

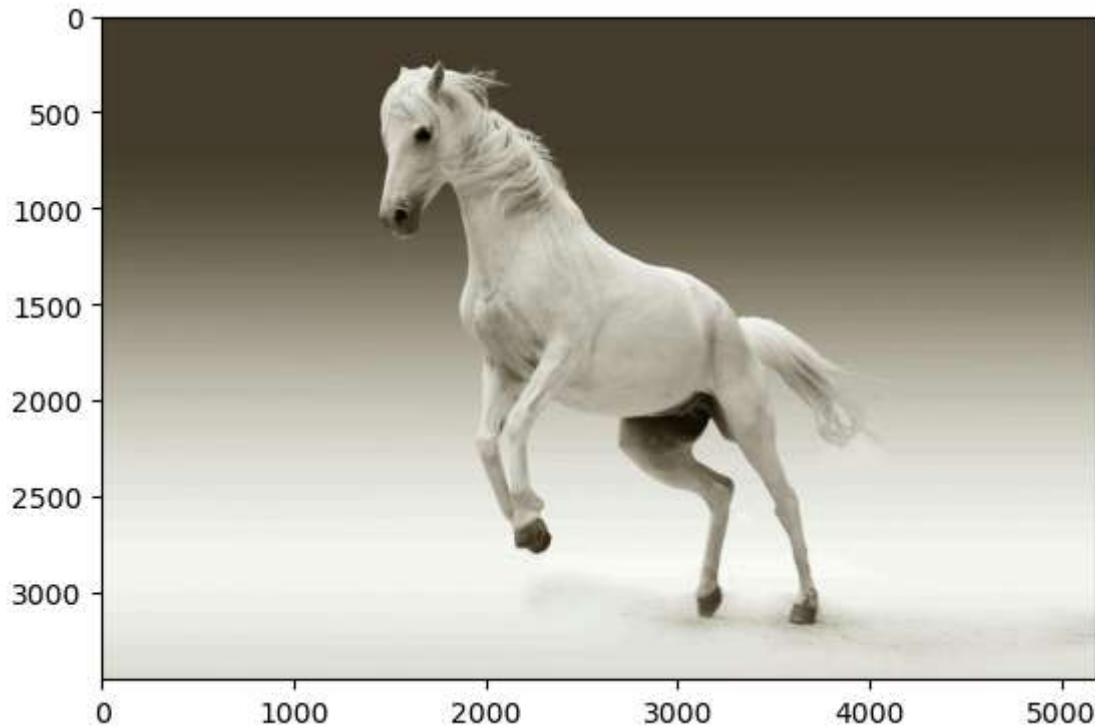
```
Out[342... array([[[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 76,  69,  51],  
   [ 76,  69,  51],  
   [ 77,  70,  52]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 75,  68,  50],  
   [ 75,  68,  50],  
   [ 76,  69,  51]],  
  
   [[ 70,  63,  45],  
   [ 70,  63,  45],  
   [ 70,  63,  45],  
   ...,  
   [ 73,  66,  48],  
   [ 74,  67,  49],  
   [ 74,  67,  49]],  
  
   ...,  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]],  
  
   [[220, 220, 212],  
   [220, 220, 212],  
   [220, 220, 212],  
   ...,  
   [223, 220, 213],  
   [223, 220, 213],  
   [223, 220, 213]]], dtype=uint8)
```

```
In [343... type(arr1)
```

```
Out[343... numpy.ndarray
```

```
In [344... arr1.shape
```

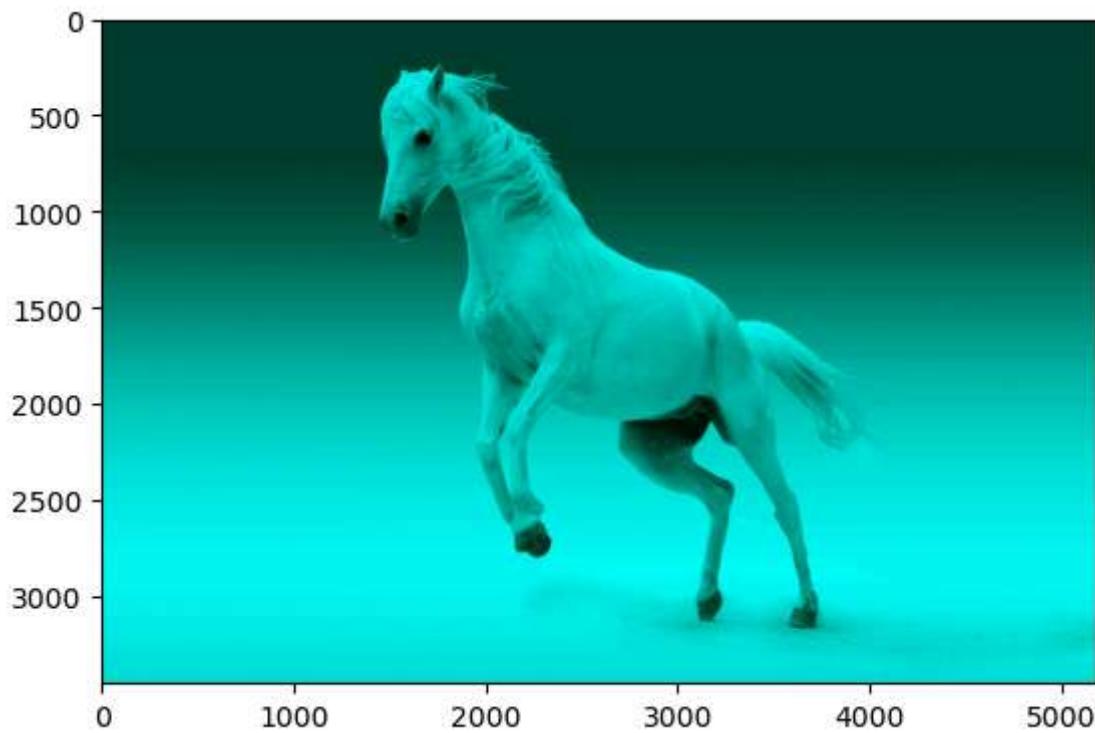
Out[344... (3456, 5184, 3)

In [345... plt.imshow(arr1)  
plt.show()

In [347... horse\_img1=arr1.copy()

In [348... horse\_img1[:, :, 0]=0

In [350... plt.imshow(horse\_img1)  
plt.show()



```
In [351]: horse_img1[:, :, 1]
```

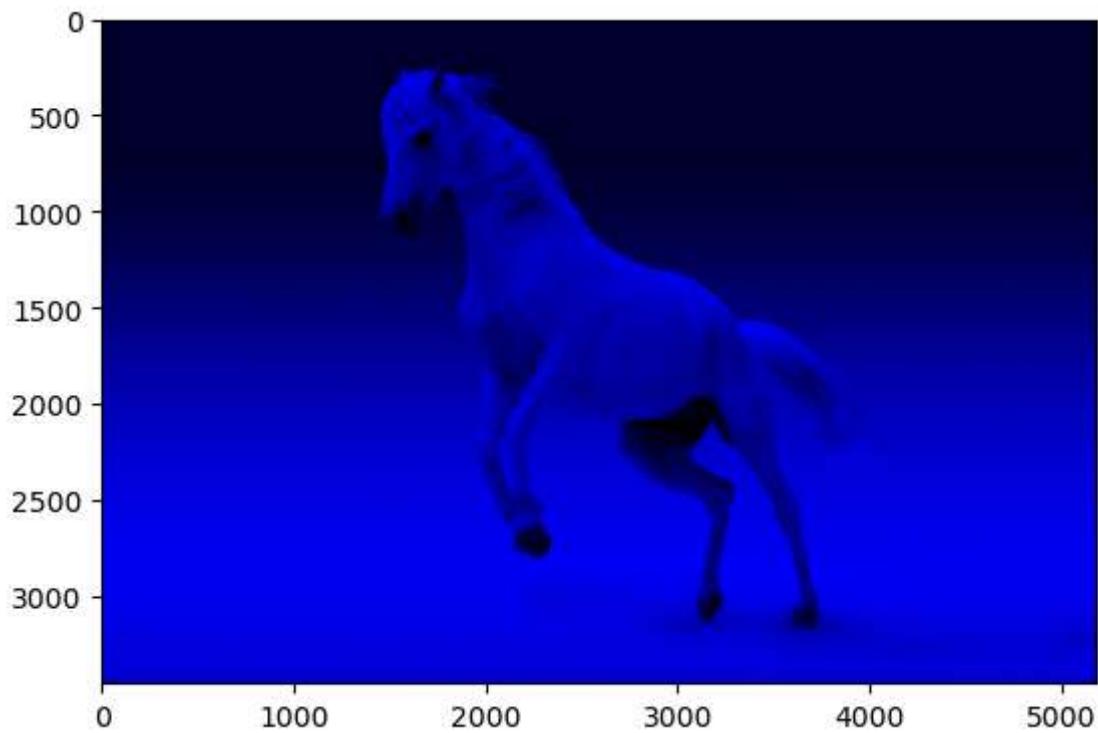
```
Out[351]: array([[ 63,  63,  63, ...,  69,  69,  70],
   [ 63,  63,  63, ...,  68,  68,  69],
   [ 63,  63,  63, ...,  66,  67,  67],
   ...,
   [220, 220, 220, ..., 220, 220, 220],
   [220, 220, 220, ..., 220, 220, 220],
   [220, 220, 220, ..., 220, 220, 220]], dtype=uint8)
```

```
In [352]: horse_img1[:, :, 1] = 0
```

```
In [353]: horse_img1[:, :, 1]
```

```
Out[353]: 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 [354]: plt.imshow(horse_img1)
plt.show()
```



In [ ]: