

```
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)

```

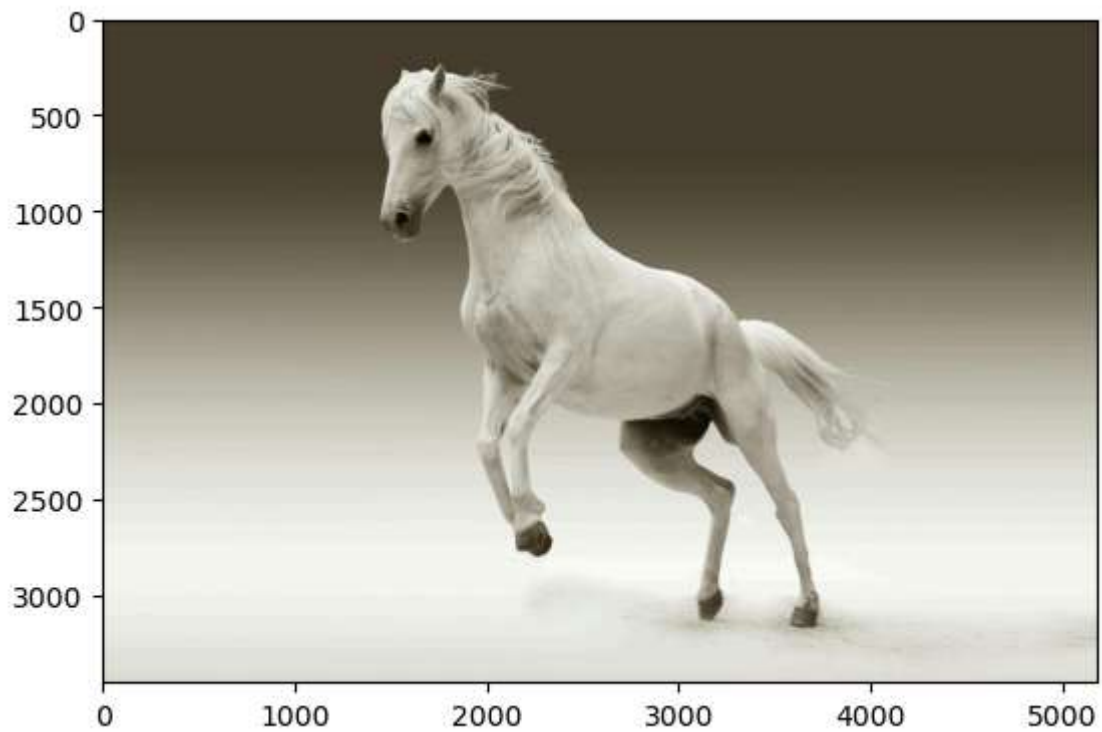
```
In [300... type(horse_arr)
```

```
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]],

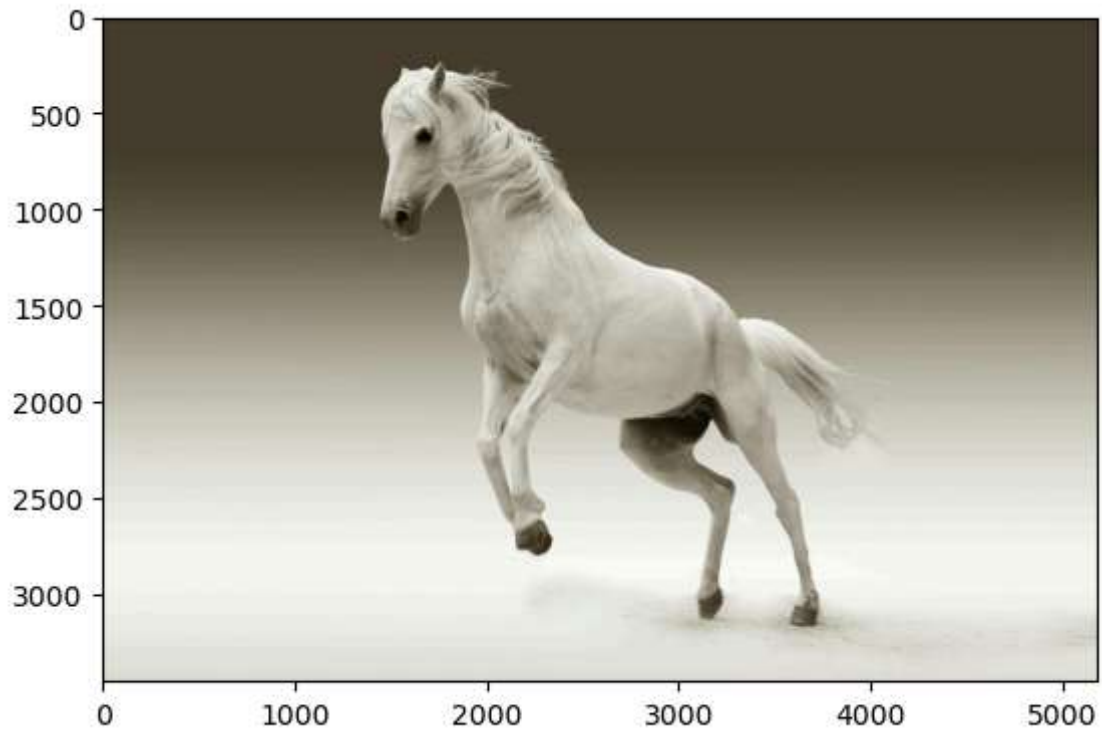
 [[ True,  True,  True],
 [ True,  True,  True],
 [ True,  True,  True],
 ...,
 [ True,  True,  True],
 [ True,  True,  True],
 [ True,  True,  True]]])

```

```

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

```



```
In [309... horse_red.shape
```

```
Out[309... (3456, 5184, 3)
```

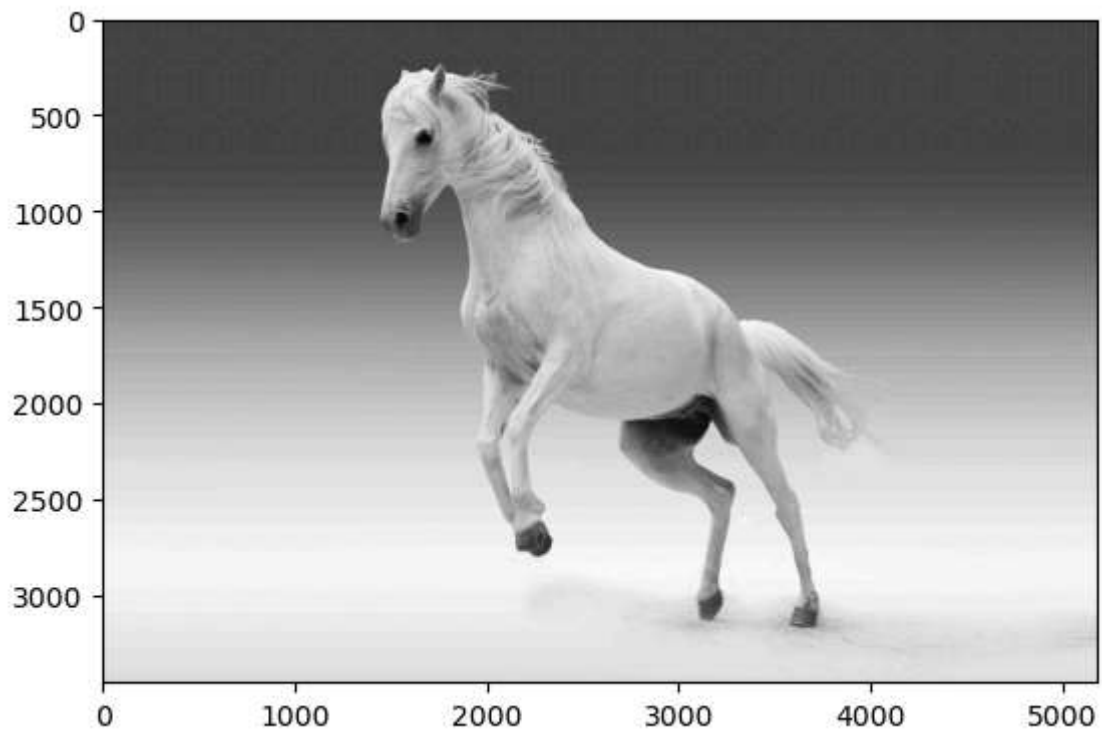
```
In [310... plt.imshow(horse_red[:, :, 0])  
plt.show()
```



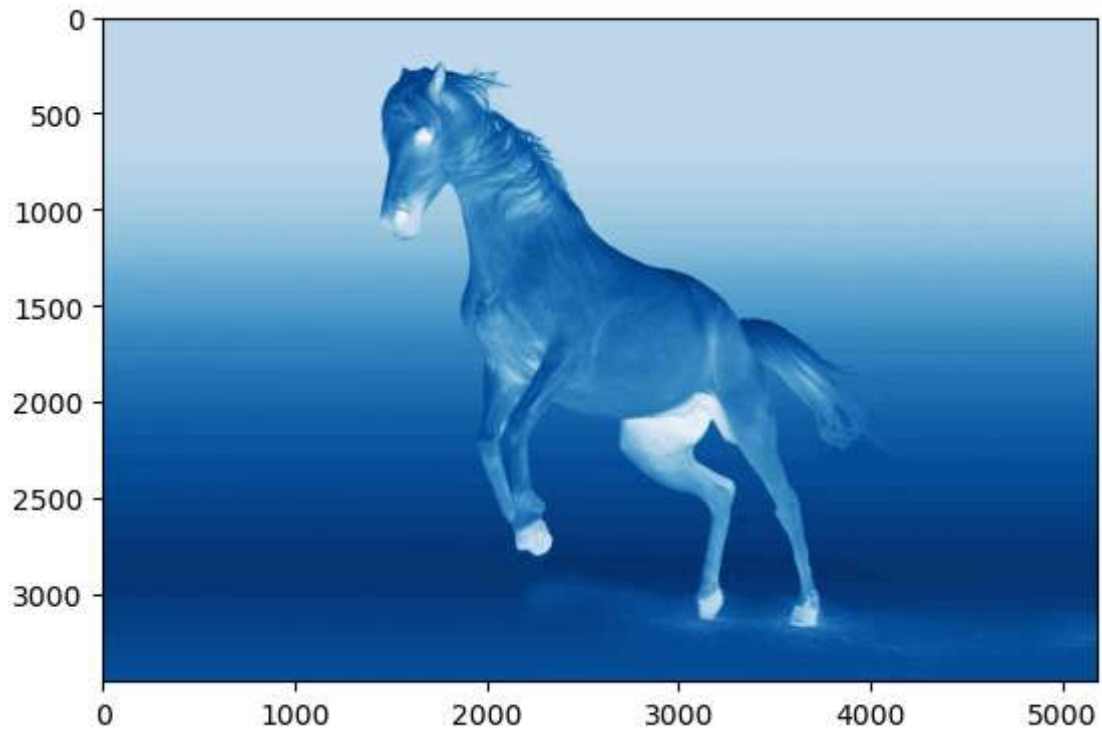
```
In [311... horse_red[:, :, 0]
```

```
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)
```

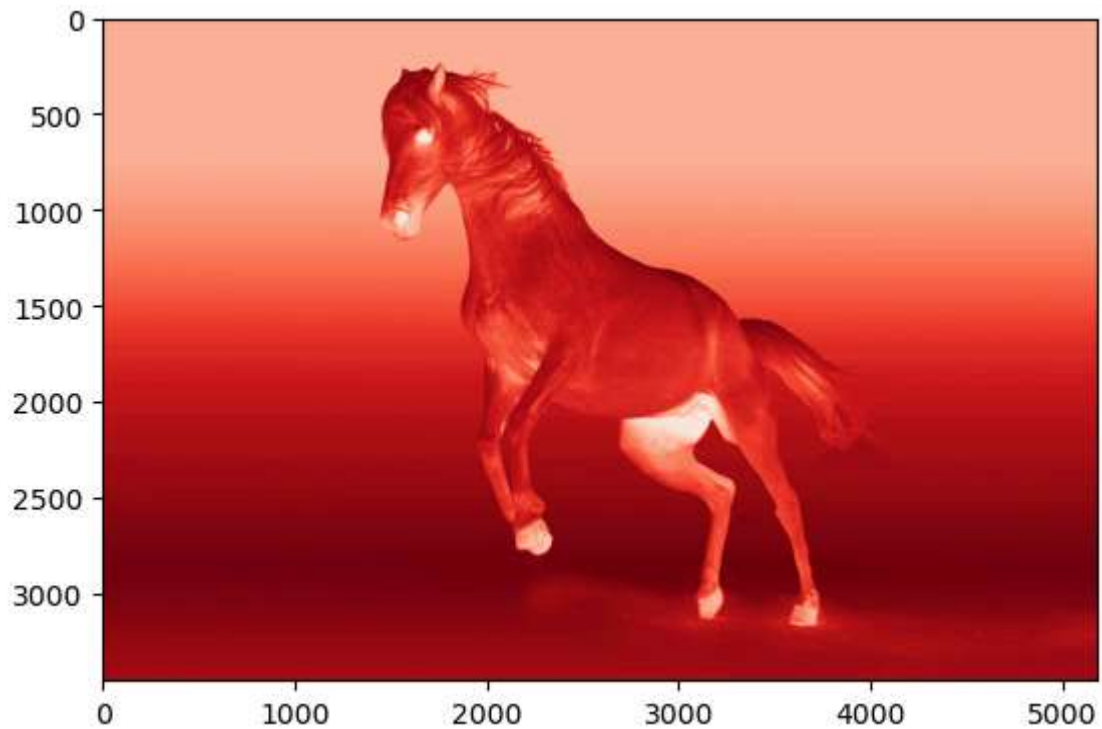
```
In [312...] plt.imshow(horse_red[:, :, 0], cmap="gray")
plt.show()
```



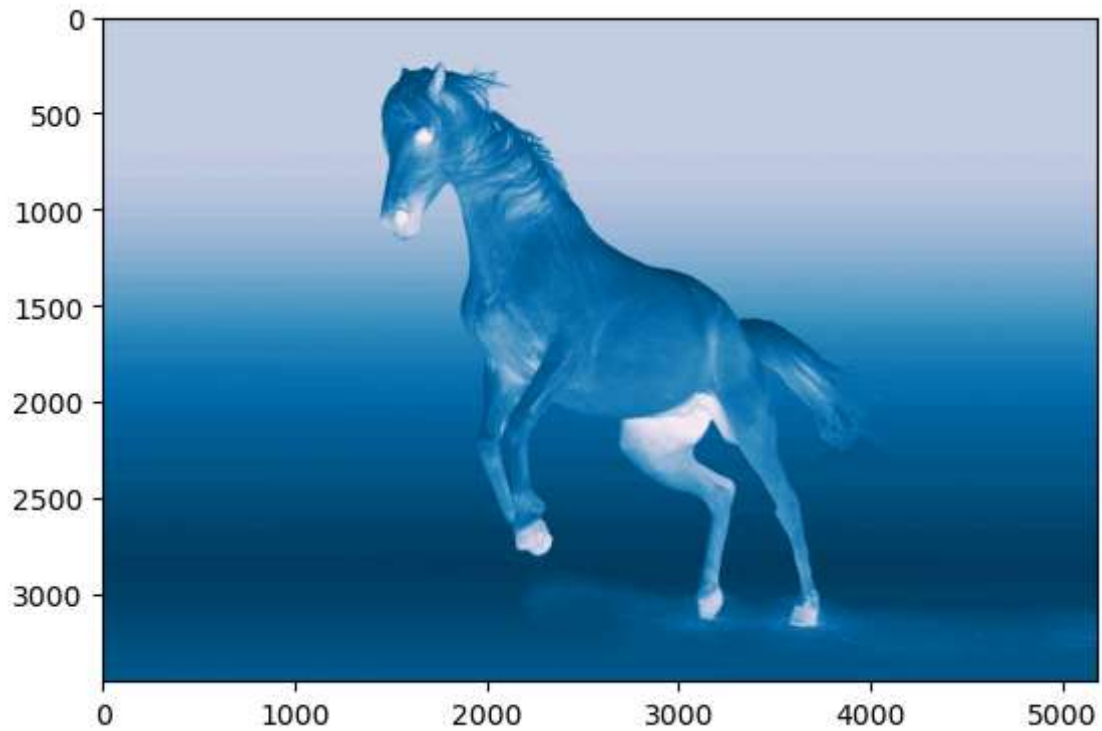
```
In [313...] plt.imshow(horse_red[:, :, 0], cmap="Blues")
plt.show()
```

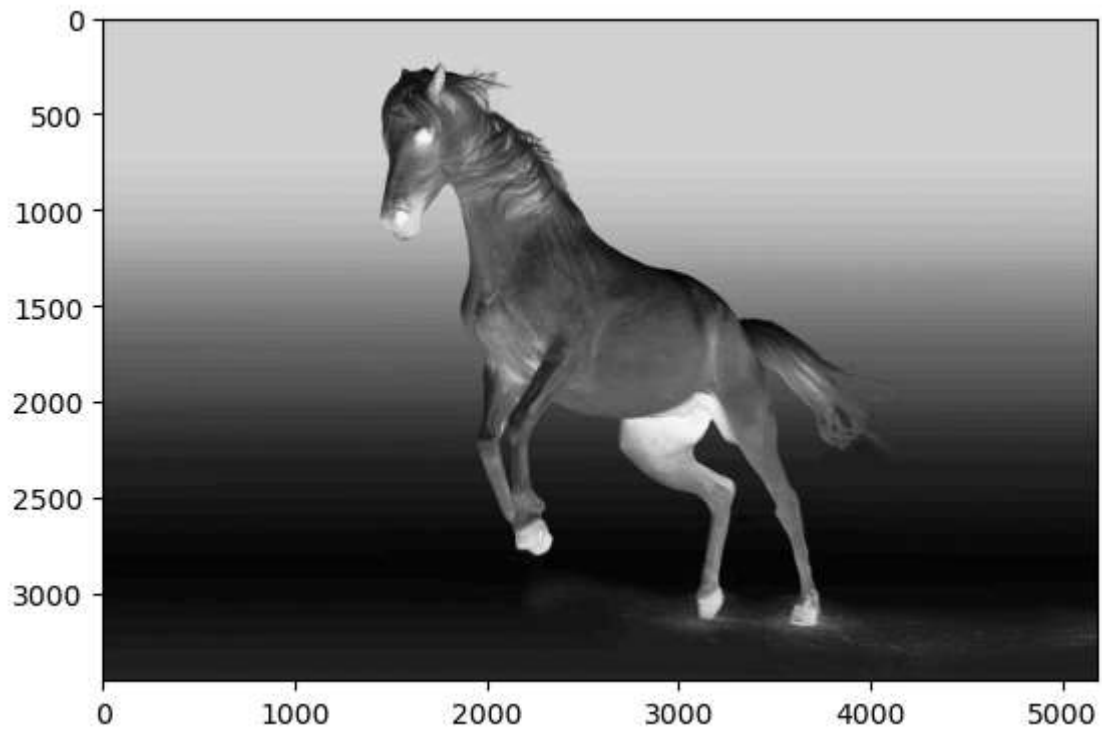
```
In [314... plt.imshow(horse_red[:, :, 0], cmap="Reds")  
plt.show()
```



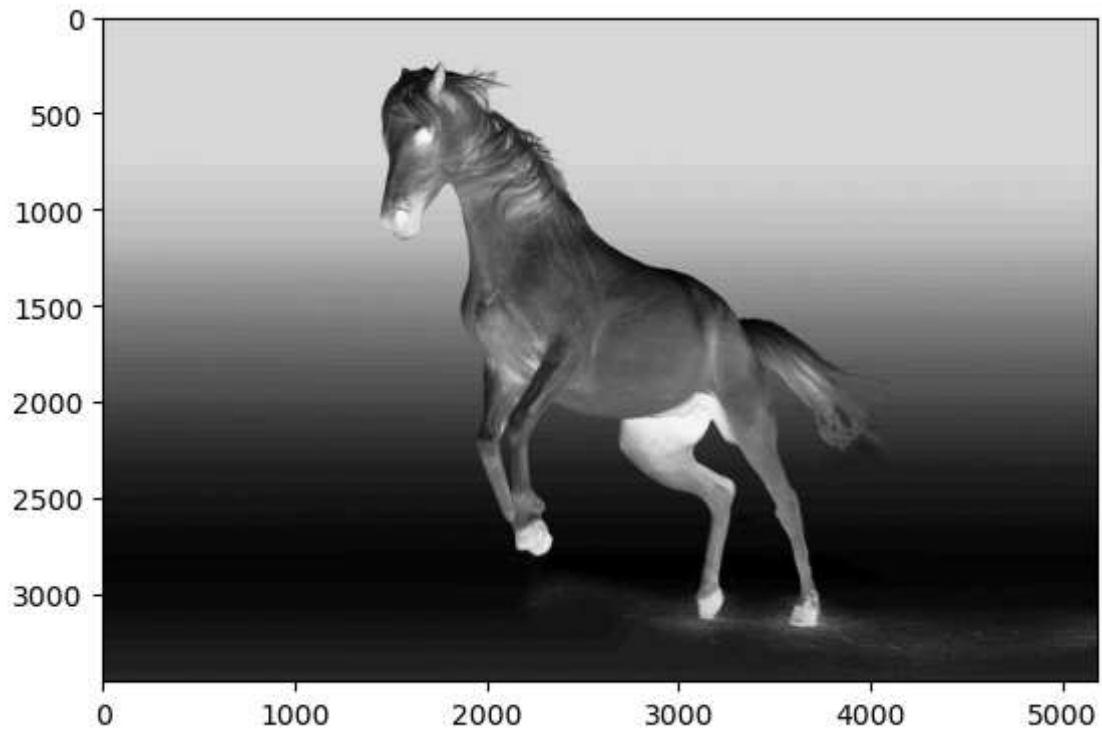
```
In [315... plt.imshow(horse_red[:, :, 0], cmap="PuBu")  
plt.show()
```



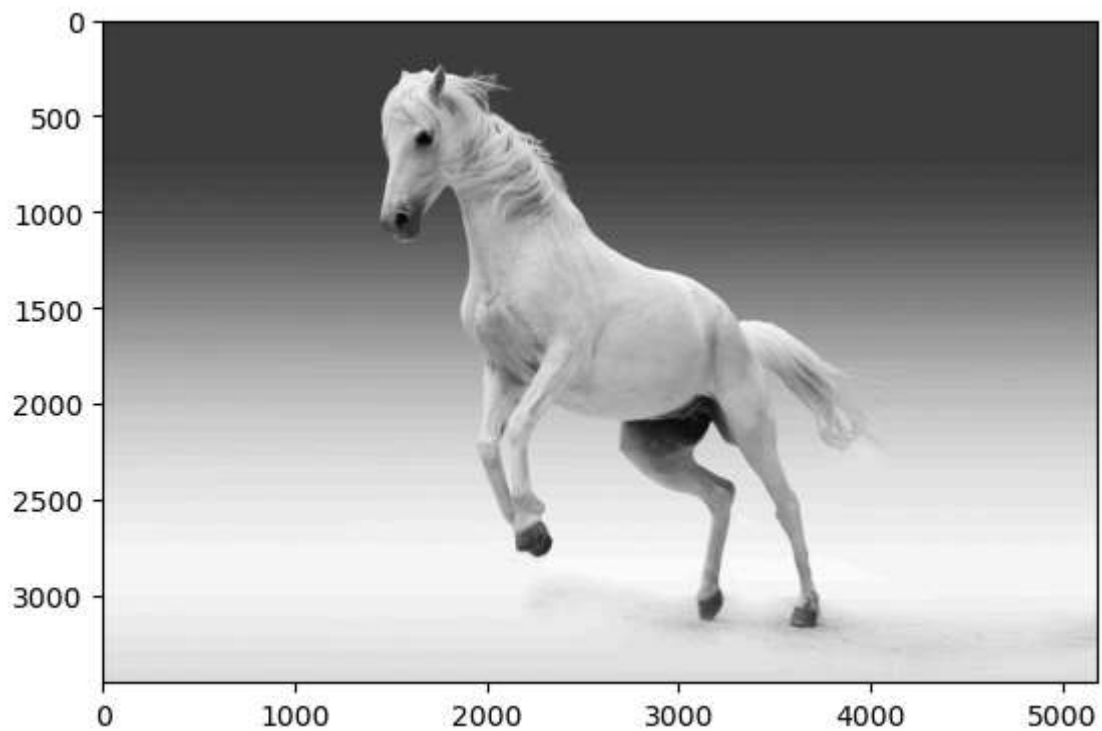
```
In [316... plt.imshow(horse_red[:, :, 0], cmap="Greys")  
plt.show()
```



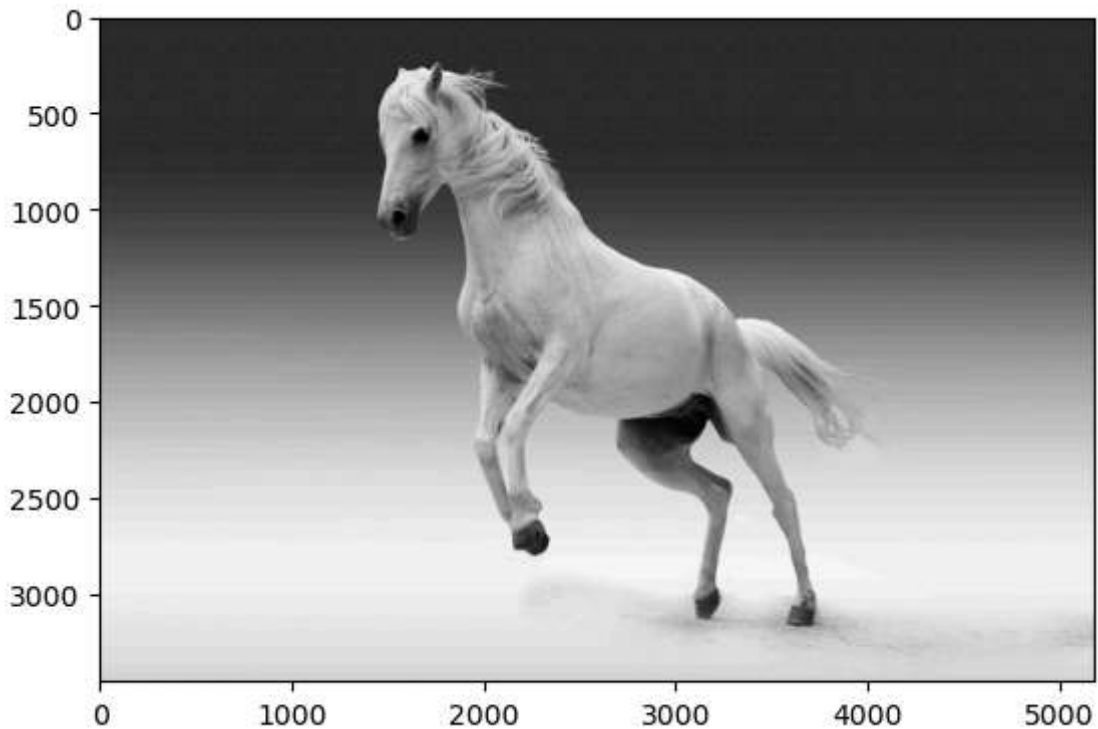
```
In [317... plt.imshow(horse_red[:, :, 1], cmap="Greys")  
plt.show()
```



```
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]`

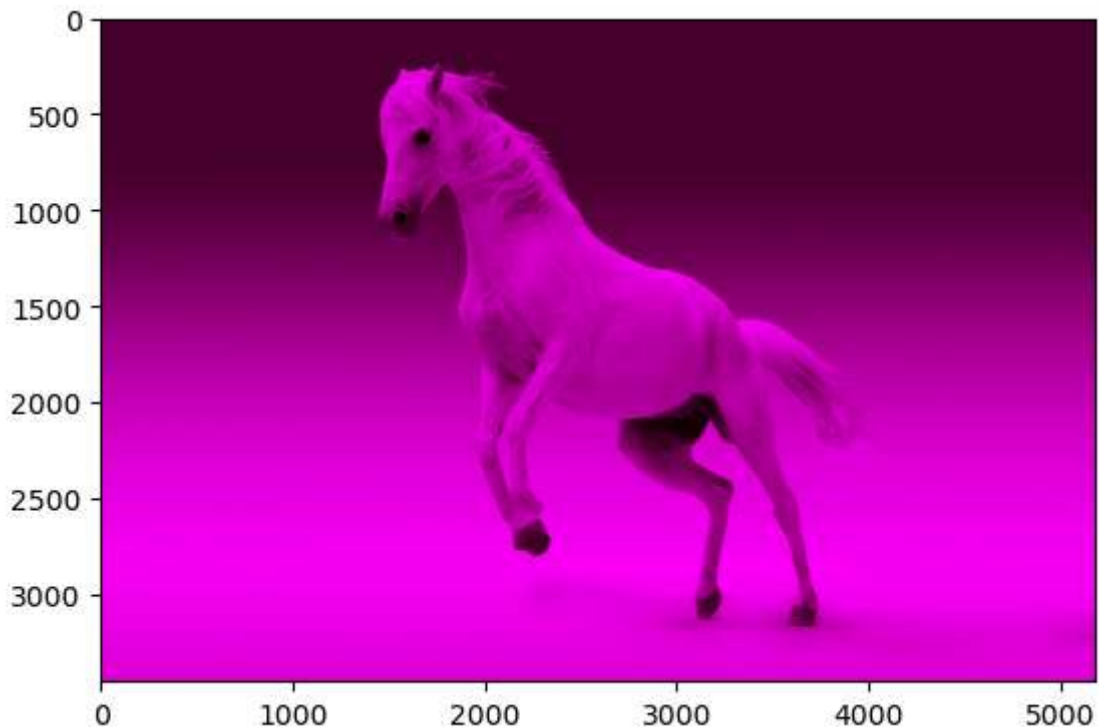
Out[322...] `array([[45, 45, 45, ..., 51, 51, 52],
[45, 45, 45, ..., 50, 50, 51],
[45, 45, 45, ..., 48, 49, 49],
...,
[212, 212, 212, ..., 213, 213, 213],
[212, 212, 212, ..., 213, 213, 213],
[212, 212, 212, ..., 213, 213, 213]], dtype=uint8)`

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)

```

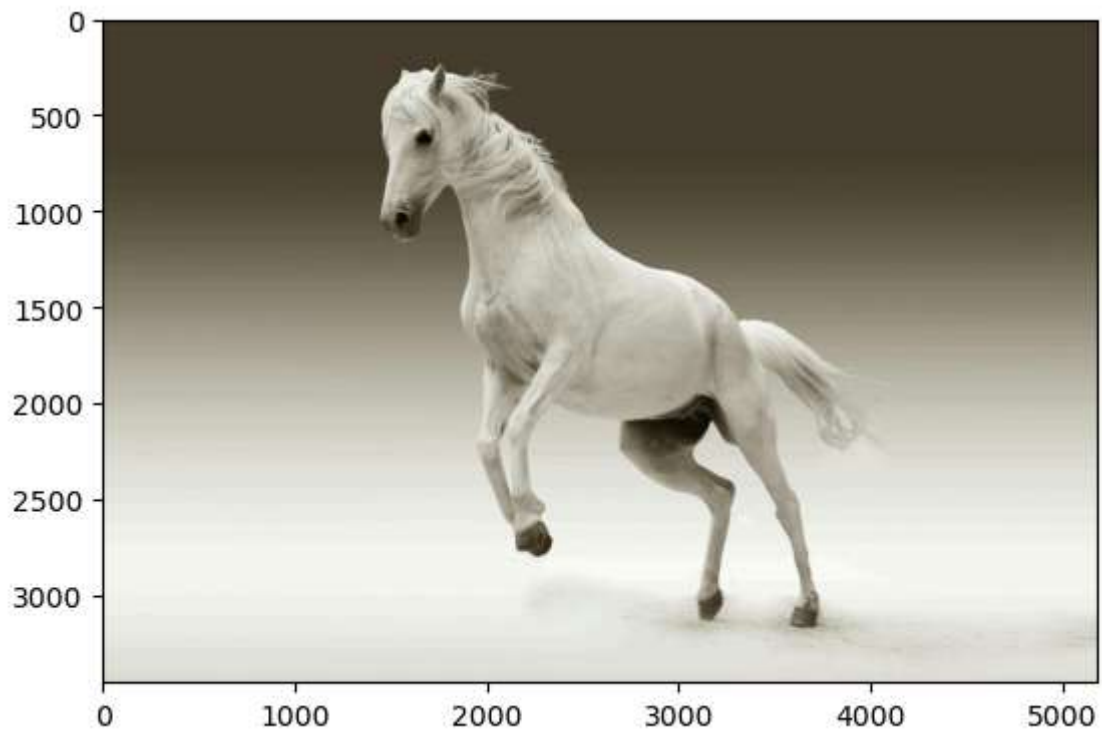
```
In [343...] type(arr1)
```

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

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

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

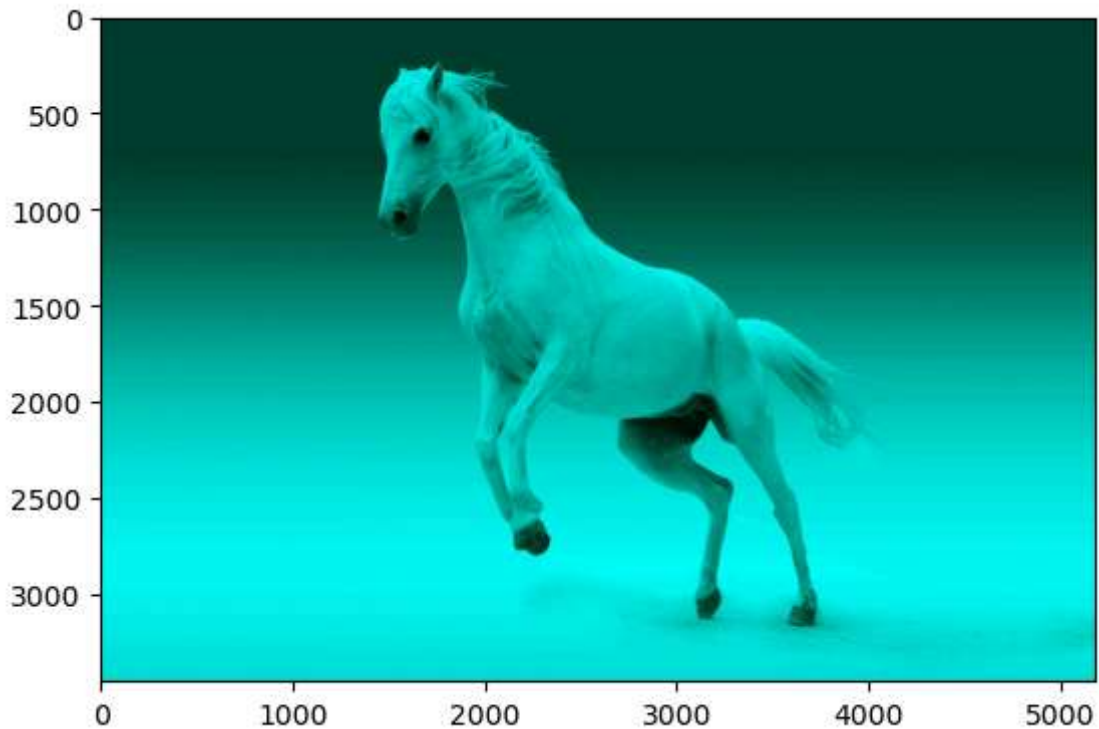
```
In [345... plt.imshow(arr1)
plt.show()
```



```
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 []: