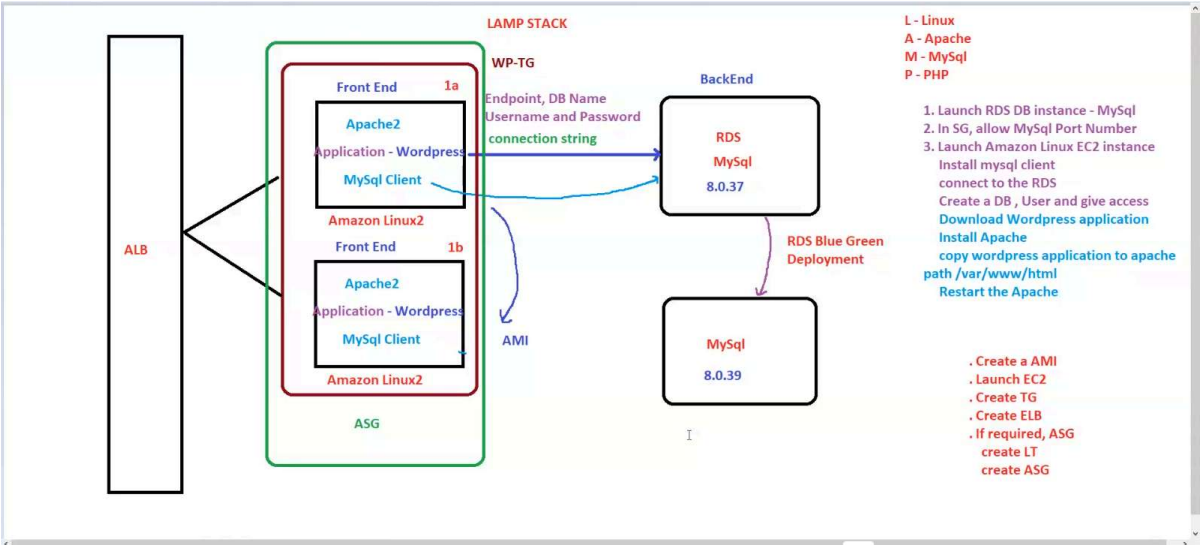
In [1]:
```
import numpy as np
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [4]:
```
from PIL import Image
```

In [5]:
```
AWS=Image.open(r'C:\Users\srinu\OneDrive\Pictures\Screenshots 1\image.png')
AWS

#plt.show(AWS)  #if above is not working use show
#plt.show
```

Out[5]:



In [9]:
```
horse_imag =Image.open(r'C:\Users\srinu\OneDrive\Desktop\horse2.jpg')
horse_imag
```

Out[9]:

In [10]:
```
type(horse_imag)                #DT of horse_imag
```

Out[10]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [11]:
```
horse_array=np.asarray(horse_imag)                #Array of horse_imag
                                                  #entire imag converted into array
horse_array
```

Out[11]:
```
array([[[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  26,  30],
        [  0,  30,  33],
        [  0,  30,  33]],

       [[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  27,  31],
        [  1,  32,  35],
        [  1,  32,  35]],

       [[  0,  16,  26],
        [  0,  16,  26],
        [  0,  16,  26],
        ...,
        [  0,  27,  31],
        [  0,  28,  31],
        [  0,  28,  31]],

       ...,

       [[ 30,  46,  33],
        [ 32,  46,  33],
        [ 33,  45,  33],
        ...,
        [108,  66,  28],
        [ 75,  32,   0],
        [ 81,  38,   6]],

       [[ 38,  54,  41],
        [ 35,  49,  36],
        [ 33,  45,  33],
        ...,
        [ 77,  35,   0],
        [ 88,  47,  19],
        [101,  60,  32]],

       [[ 49,  61,  51],
        [ 50,  60,  51],
        [ 61,  69,  56],
        ...,
        [ 69,  42,  13],
        [ 80,  40,   4],
        [110,  70,  34]]], dtype=uint8)
```

In [12]:
```
type(horse_array)
```

Out[12]:
```
numpy.ndarray
```

In [17]:
```
horse_array.shape           #shape is an attribute in numpy.which gives height,widt
                            #here  this is an image,so 30009pi height,4154pi width,
```

Out[17]: (3009, 4514, 3)

In [19]:
```
plt.imshow(horse_array)
```

Out[19]: <matplotlib.image.AxesImage at 0x2919c19aed0>

In [20]:
```
horse_red=horse_array.copy()            #Creating COPY of horse_array
```

In [23]:
```
horse_array==horse_red                   #checking whether original array and copy
```

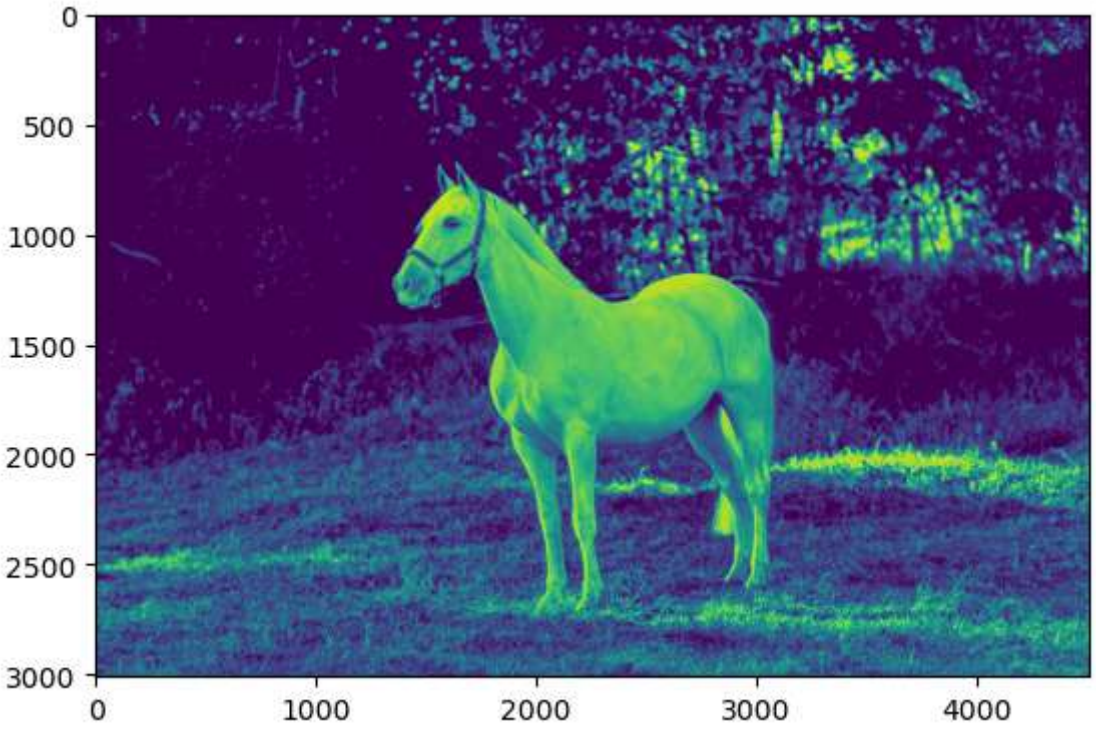
Out[23]:
```
array([[[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ 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 [25]:
```
plt.imshow(horse_red)
```

Out[25]:
```
<matplotlib.image.AxesImage at 0x2919c5f6720>
```

In [27]:
```
plt.imshow(horse_red[:,:,0])
```

Out[27]: <matplotlib.image.AxesImage at 0x2919c629f40>



In [28]:
```
horse_red[:,:,0]        #horse_red represed red channel(0) in 3D array
                        #horse_red is an image representing in  3D array,3Dimension
                        #0...red,1...green,2...blue
```

Out[28]:
```
array([[  0,   0,   0, ...,   0,   0,   0],
       [  0,   0,   0, ...,   0,   1,   1],
       [  0,   0,   0, ...,   0,   0,   0],
       ...,
       [ 30,  32,  33, ..., 108,  75,  81],
       [ 38,  35,  33, ...,  77,  88, 101],
       [ 49,  50,  61, ...,  69,  80, 110]], dtype=uint8)
```

In [31]:
```
horse_red[:,:,0]
```

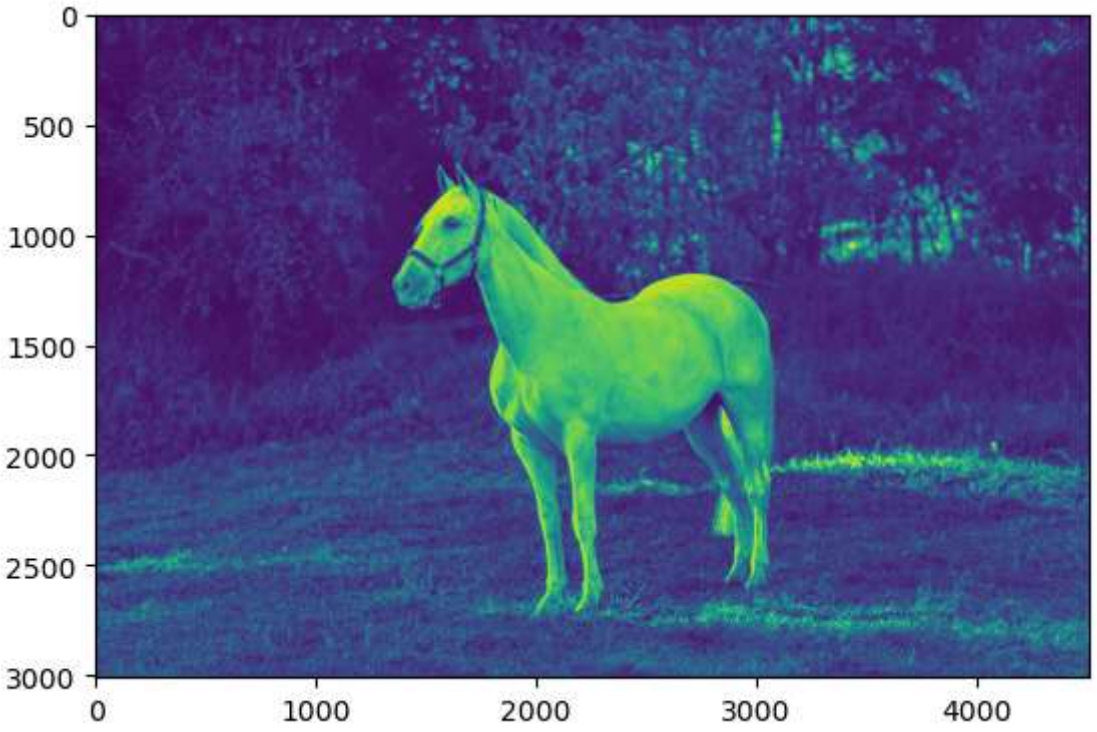
Out[31]:
```
array([[  0,   0,   0, ...,   0,   0,   0],
       [  0,   0,   0, ...,   0,   1,   1],
       [  0,   0,   0, ...,   0,   0,   0],
       ...,
       [ 30,  32,  33, ..., 108,  75,  81],
       [ 38,  35,  33, ...,  77,  88, 101],
       [ 49,  50,  61, ...,  69,  80, 110]], dtype=uint8)
```

In [33]:
```
horse_red[:,:,1]
```

Out[33]:
```
array([[15, 15, 15, ..., 26, 30, 30],
       [15, 15, 15, ..., 27, 32, 32],
       [16, 16, 16, ..., 27, 28, 28],
       ...,
       [46, 46, 45, ..., 66, 32, 38],
       [54, 49, 45, ..., 35, 47, 60],
       [61, 60, 69, ..., 42, 40, 70]], dtype=uint8)
```

In [35]:
```
plt.imshow(horse_red[:,:,1])
```

Out[35]:
```
<matplotlib.image.AxesImage at 0x2919c8324b0>
```

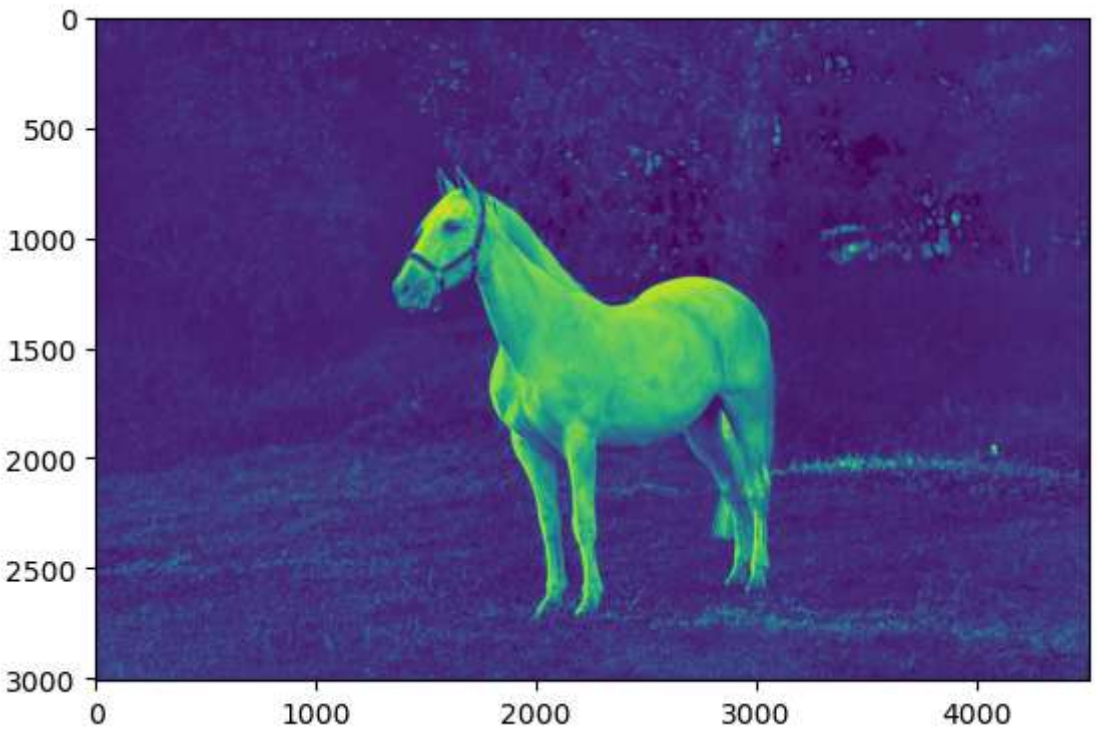


In [36]:
```
horse_red[:,:,2]
```

Out[36]:
```
array([[25, 25, 25, ..., 30, 33, 33],
       [25, 25, 25, ..., 31, 35, 35],
       [26, 26, 26, ..., 31, 31, 31],
       ...,
       [33, 33, 33, ..., 28,  0,  6],
       [41, 36, 33, ...,  0, 19, 32],
       [51, 51, 56, ..., 13,  4, 34]], dtype=uint8)
```

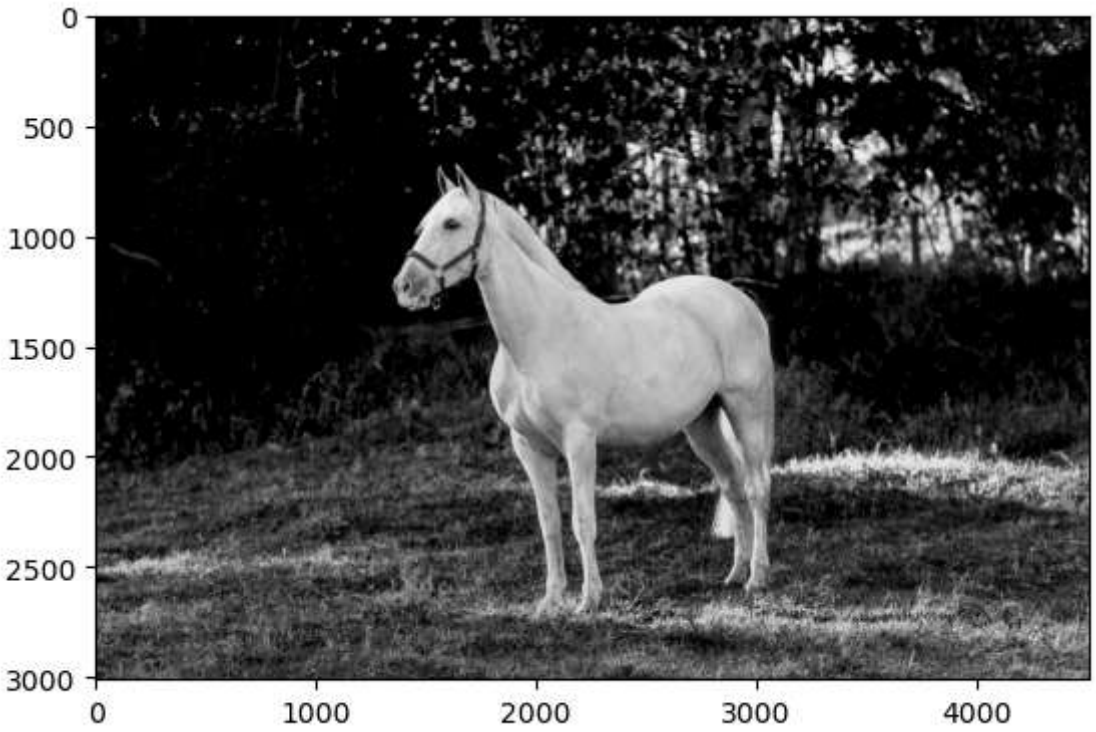
In [37]:
```
plt.imshow(horse_red[:,:,2])
```

Out[37]:
```
<matplotlib.image.AxesImage at 0x2919c88fec0>
```



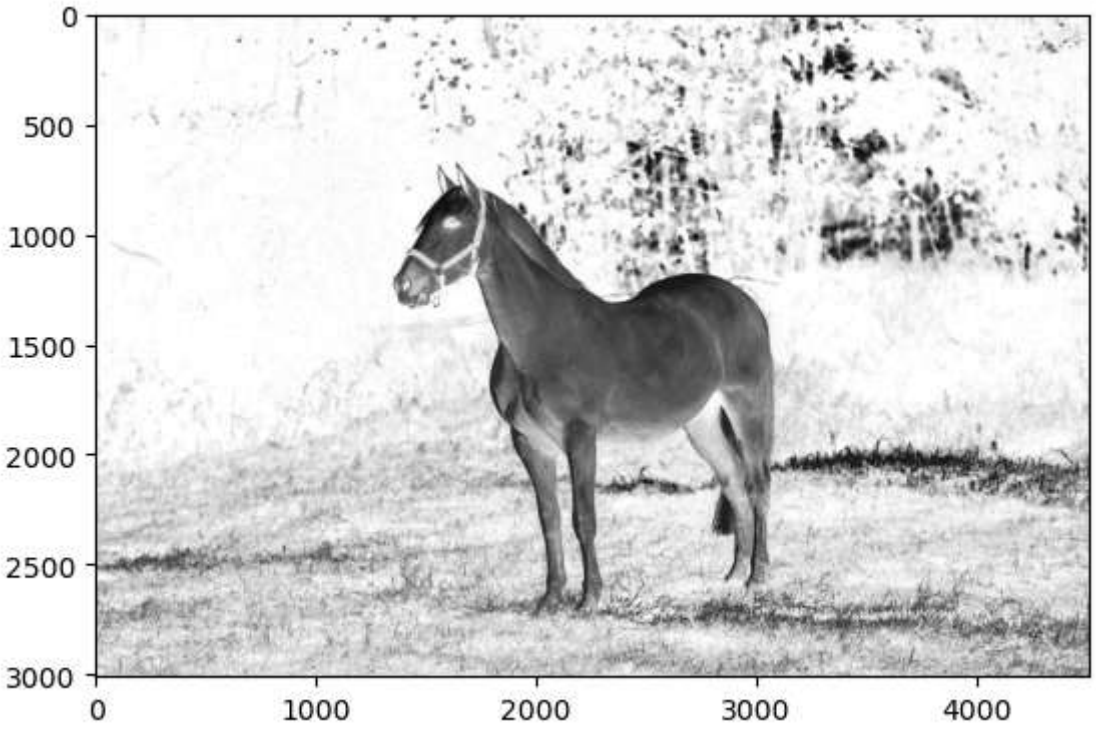
In [40]:
```
plt.imshow(horse_red[:,:,0],cmap='grey')                    #the colored image changes
```

Out[40]:
```
<matplotlib.image.AxesImage at 0x2919c62a330>
```



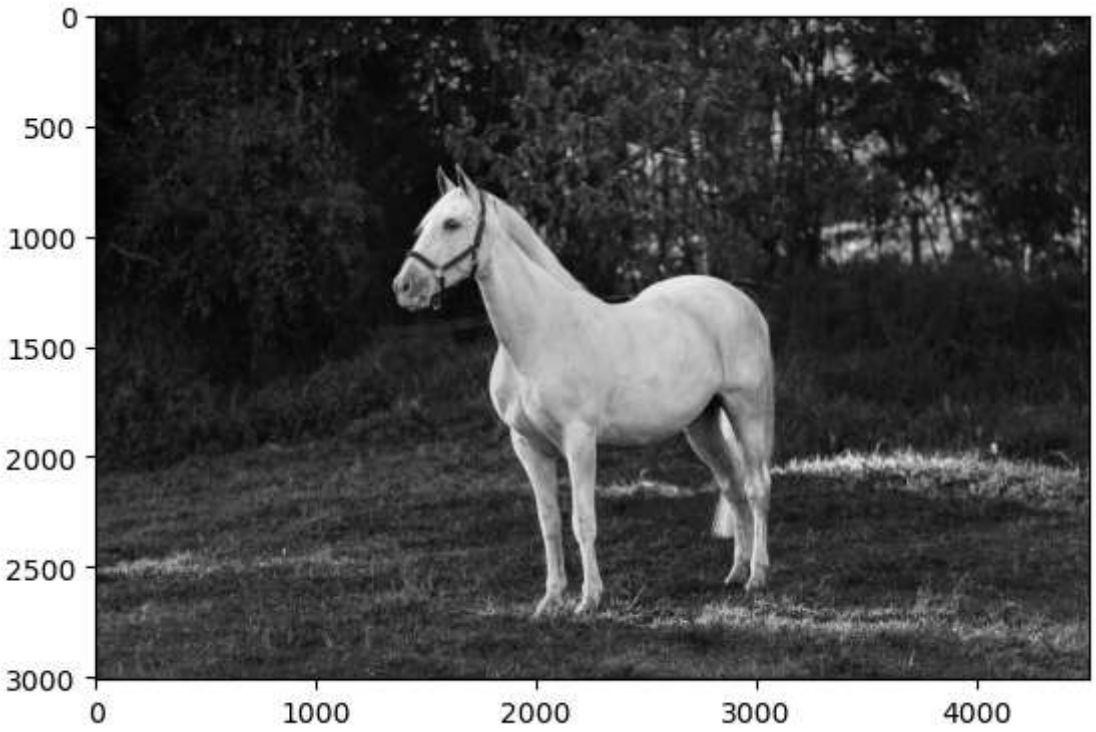
In [41]:
```
plt.imshow(horse_red[:,:,0],cmap='Greys')
```

Out[41]: <matplotlib.image.AxesImage at 0x2919c739850>



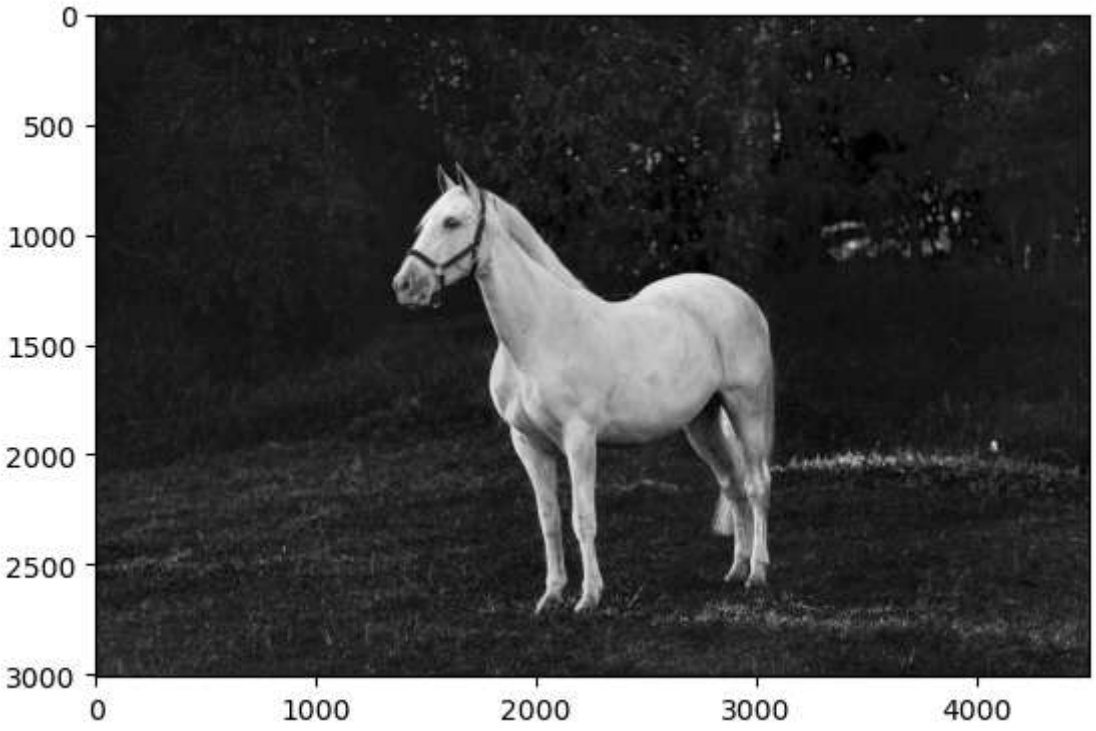
In [43]:
```
plt.imshow(horse_red[:,:,1],cmap='grey')              #green channel(1) with grey c
```

Out[43]: <matplotlib.image.AxesImage at 0x2919c78a4b0>



In [44]:
```
plt.imshow(horse_red[:,:,2],cmap='grey')                #blue channel(2) with grey co
```

Out[44]: <matplotlib.image.AxesImage at 0x2919c619970>



In [55]:
```
horse_red[:,:,1]=0
```

In [57]:
```
horse_red[:,:,1]
```

Out[57]:
```
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 [61]:
```
plt.imshow(horse_red)
```

Out[61]:
```
<matplotlib.image.AxesImage at 0x2919fd78620>
```

In [63]:
```
horse_red[:,:,2]
```

Out[63]:
```
array([[25, 25, 25, ..., 30, 33, 33],
       [25, 25, 25, ..., 31, 35, 35],
       [26, 26, 26, ..., 31, 31, 31],
       ...,
       [33, 33, 33, ..., 28,  0,  6],
       [41, 36, 33, ...,  0, 19, 32],
       [51, 51, 56, ..., 13,  4, 34]], dtype=uint8)
```

In [65]:
```
horse_red[:,:,2]=0
```

In [67]:
```
horse_red[:,:,2]
```

Out[67]:
```
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 [69]:
```
plt.imshow(horse_red)
```

Out[69]:
```
<matplotlib.image.AxesImage at 0x2919c789550>
```

In [125…
```
horse_array
```

Out[125…

```
array([[[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  26,  30],
        [  0,  30,  33],
        [  0,  30,  33]],

       [[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  27,  31],
        [  1,  32,  35],
        [  1,  32,  35]],

       [[  0,  16,  26],
        [  0,  16,  26],
        [  0,  16,  26],
        ...,
        [  0,  27,  31],
        [  0,  28,  31],
        [  0,  28,  31]],

       ...,

       [[ 30,  46,  33],
        [ 32,  46,  33],
        [ 33,  45,  33],
        ...,
        [108,  66,  28],
        [ 75,  32,   0],
        [ 81,  38,   6]],

       [[ 38,  54,  41],
        [ 35,  49,  36],
        [ 33,  45,  33],
        ...,
        [ 77,  35,   0],
        [ 88,  47,  19],
        [101,  60,  32]],

       [[ 49,  61,  51],
        [ 50,  60,  51],
        [ 61,  69,  56],
        ...,
        [ 69,  42,  13],
        [ 80,  40,   4],
        [110,  70,  34]]], dtype=uint8)
```

In [127…

```
horse_red
```

Out[127…

```
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]],

       [[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]],

       [[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 [129…

```
horse_imag
```

Out[129…

In [147…

```
horse_array1=np.asarray(horse_imag)
```

In [149…

```
horse_array1
```

Out[149…

```
array([[[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  26,  30],
        [  0,  30,  33],
        [  0,  30,  33]],

       [[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  27,  31],
        [  1,  32,  35],
        [  1,  32,  35]],

       [[  0,  16,  26],
        [  0,  16,  26],
        [  0,  16,  26],
        ...,
        [  0,  27,  31],
        [  0,  28,  31],
        [  0,  28,  31]],

       ...,

       [[ 30,  46,  33],
        [ 32,  46,  33],
        [ 33,  45,  33],
        ...,
        [108,  66,  28],
        [ 75,  32,   0],
        [ 81,  38,   6]],

       [[ 38,  54,  41],
        [ 35,  49,  36],
        [ 33,  45,  33],
        ...,
        [ 77,  35,   0],
        [ 88,  47,  19],
        [101,  60,  32]],

       [[ 49,  61,  51],
        [ 50,  60,  51],
        [ 61,  69,  56],
        ...,
        [ 69,  42,  13],
        [ 80,  40,   4],
        [110,  70,  34]]], dtype=uint8)
```

In [151…

```
type(horse_array1)
```

Out[151…

```
numpy.ndarray
```

In [153…

```
horse_array1.shape
```

Out[153… (3009, 4514, 3)

In [157…
```
plt.imshow(horse_array1)
```

Out[157… <matplotlib.image.AxesImage at 0x291d30f33b0>

In [159…
```
horse_red1=horse_array1.copy()
```

In [161…
```
horse_red1
```

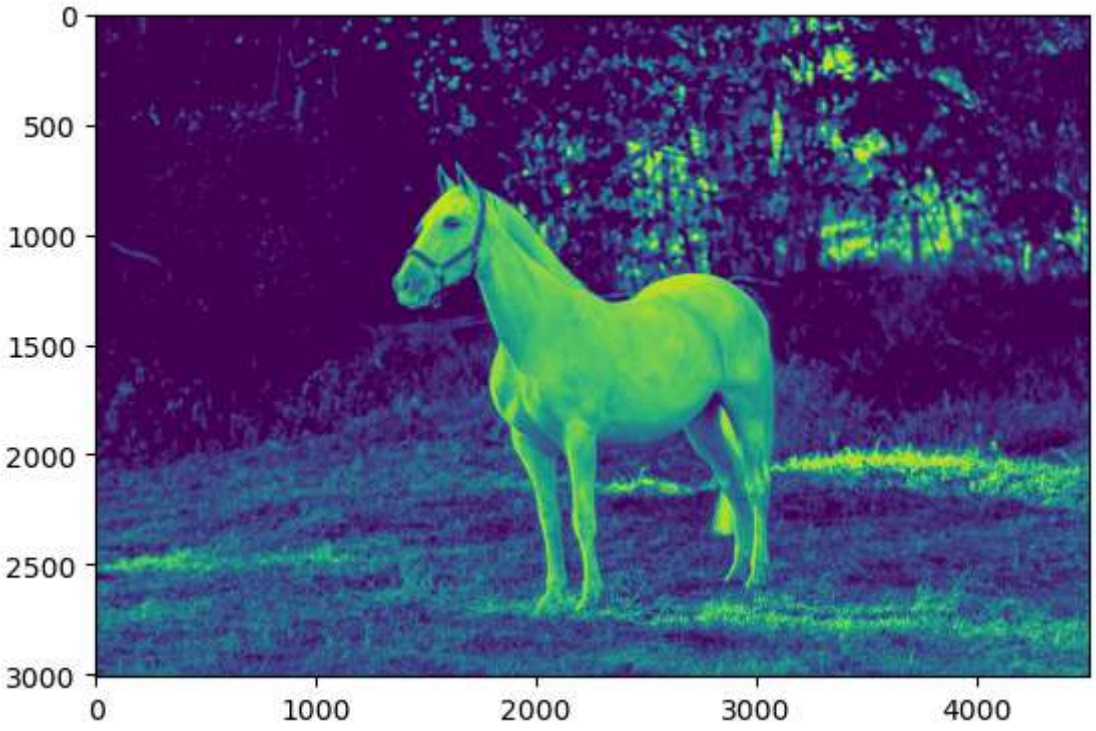
Out[161…
```
array([[[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  26,  30],
        [  0,  30,  33],
        [  0,  30,  33]],

       [[  0,  15,  25],
        [  0,  15,  25],
        [  0,  15,  25],
        ...,
        [  0,  27,  31],
        [  1,  32,  35],
        [  1,  32,  35]],

       [[  0,  16,  26],
        [  0,  16,  26],
        [  0,  16,  26],
        ...,
        [  0,  27,  31],
        [  0,  28,  31],
        [  0,  28,  31]],

       ...,

       [[ 30,  46,  33],
        [ 32,  46,  33],
        [ 33,  45,  33],
        ...,
        [108,  66,  28],
        [ 75,  32,   0],
        [ 81,  38,   6]],

       [[ 38,  54,  41],
        [ 35,  49,  36],
        [ 33,  45,  33],
        ...,
        [ 77,  35,   0],
        [ 88,  47,  19],
        [101,  60,  32]],

       [[ 49,  61,  51],
        [ 50,  60,  51],
        [ 61,  69,  56],
        ...,
        [ 69,  42,  13],
        [ 80,  40,   4],
        [110,  70,  34]]], dtype=uint8)
```

In [163…
```
plt.imshow(horse_red1)
```

Out[163…
```
<matplotlib.image.AxesImage at 0x291d65e9970>
```

In [165…
```
plt.imshow(horse_red1[:,:,0])
```

Out[165…
```
<matplotlib.image.AxesImage at 0x291d664aff0>
```



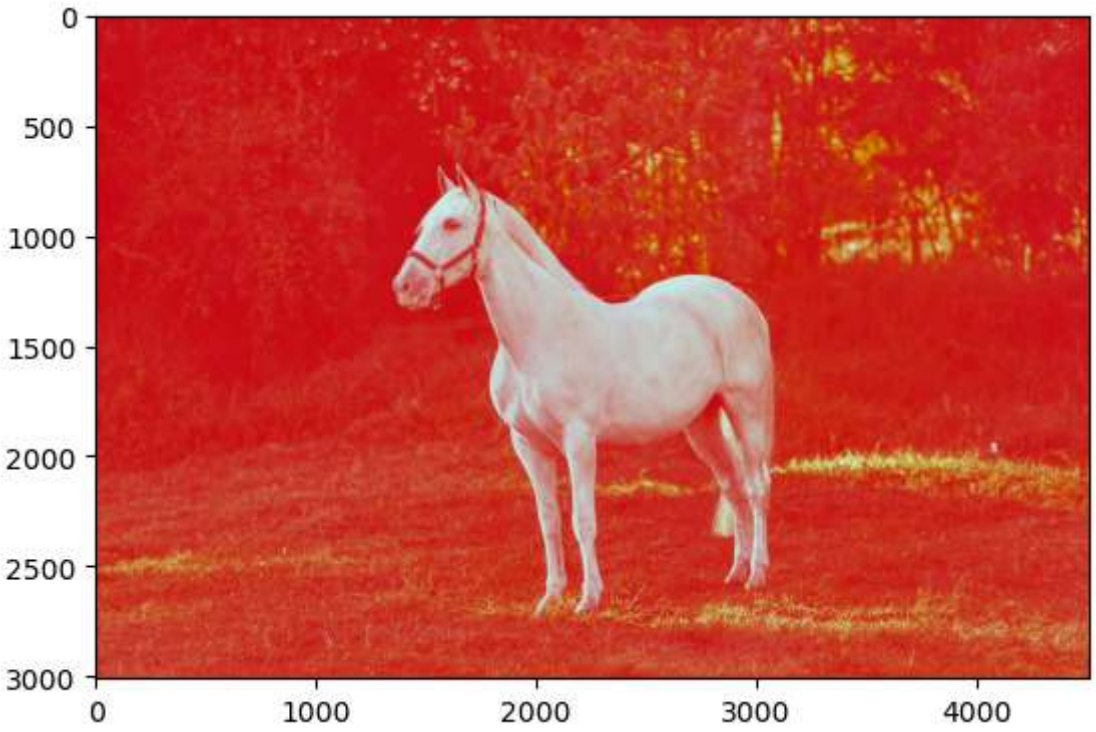
In [211…
```
horse_red1[:,:,0]=200
```

In [213…
```
horse_red1[:,:,0]
```

Out[213…
```
array([[200, 200, 200, ..., 200, 200, 200],
       [200, 200, 200, ..., 200, 200, 200],
       [200, 200, 200, ..., 200, 200, 200],
       ...,
       [200, 200, 200, ..., 200, 200, 200],
       [200, 200, 200, ..., 200, 200, 200],
       [200, 200, 200, ..., 200, 200, 200]], dtype=uint8)
```

In [217…
```
plt.imshow(horse_red1)
```

Out[217…
```
<matplotlib.image.AxesImage at 0x29180010230>
```



In [ ]: