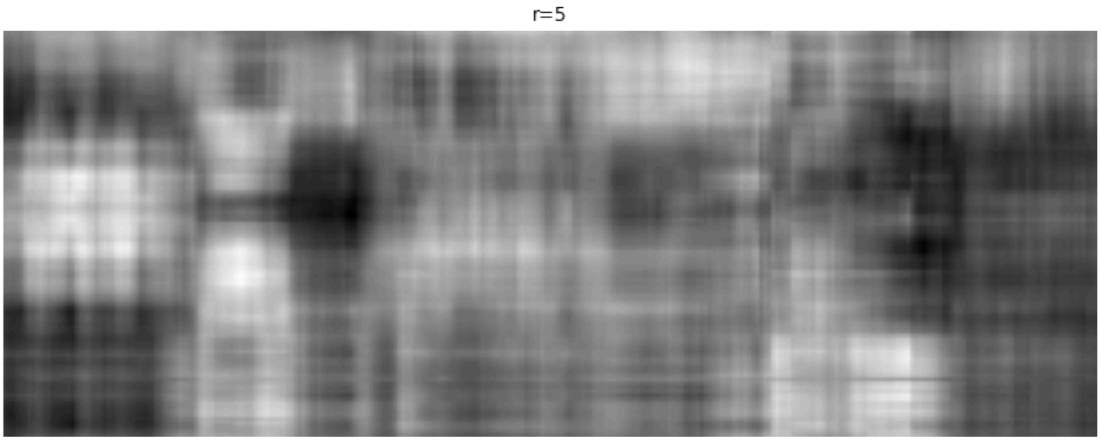
In [9]:

```
from matplotlib.pyplot import imread
import matplotlib.pyplot as plt
import numpy as np

# Correct figsize to have width and height
plt.rcParams['figure.figsize'] = [16.8, 8.4]  # Adjust the height value

A = imread('flowers.jpg')
X = np.mean(A, -1)

img = plt.imshow(X)
img.set_cmap('gray')

plt.axis('off')
plt.show()

U, S, VT = np.linalg.svd(X, full_matrices=False)
S = np.diag(S)

j = 0
for r in (5, 20, 100):
    Xapprox = U[:, :r] @ S[:r, :r] @ VT[:r, :]

    plt.figure(j + 1)
    j += 1
    img = plt.imshow(Xapprox)
    img.set_cmap('gray')

    plt.axis('off')
    plt.title('r=' + str(r))

plt.show()

```



In [ ]:

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