```
import numpy as np
from numpy import linalg as LA
```

```
print("ANSWER#1 ", 128*128*3)
```

```
ANSWER#1  49152
```

```
print("ANSWER#2 ", 16*16*3)
```

```
ANSWER#2  768
```

```
# y = Ax+b
# Here y is (768,1) and x is (49152,1). Since addintion is between same size matr
# So y is Ax -> (768,1) => (m,n) * (49152,1)
# we know that multiplcation can happen between matrixes with size (m,n) and (n,
# Hence  m = 768 and n = 49152. So size of matrix A is (768, 49152)
print("ANSWER#3 ", 768 * 49152)
```

```
ANSWER#3  37748736
```

```
x = [-10, 2, 4, 8, 9]
data = {
    'L1': LA.norm(x,1),
    'L2': LA.norm(x,2),
    'L3': LA.norm(x,3),
    'Linf': LA.norm(x,np.inf)
}
#print(data)
print("ANSWER#4 ", max(data, key=data.get))
```

```
ANSWER#4  L1
```

```
W = np.array([[1,3,2,4,6], [3,2,7,8,7], [2, 7, 3, 7, 8], [4, 8, 7, 4, 9], [6,7,8,
print("ANSWER#5 ", np.round(LA.eigvals(W).max(),4))
```

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```
print("ANSWER#6 ", np.round(np.sqrt(LA.eigvals(W.dot(W)).max()),4))
```

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```
print("ANSWER#7 ", np.round(LA.svd(W)[1].max(),4))
```

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```
print("ANSWER#8 Options 2nd and 4th", )
```

```
```

```
y0 = np.array([[1, 0, 0, 0, 0]]).T
b = np.array([[0, 1, 0, 0, 0]]).T
y1 = W.dot(y0) + b
print("ANSWER#9 ", np.round(LA.norm(y1,2),4))
```

```
```

```
y2 = W.dot(y1) + b
print("ANSWER#10 ", np.round(LA.norm(y2,2)/LA.norm(y0,2),4))
```