 # part 1

```
import numpy as np

# values of x1, x2, x3
x = np.array([-0.77459666924, 0, 0.77459666924])

# values of w1, w2, w3
w = np.array([0.55555555556, 0.88888888889, 0.55555555556])

# result is summation of w_i * f(x_i) where f(x_i) is e^x_i * cos(x_i)
result = np.sum(w * np.exp(x) * np.cos(x))

print("Integral of e^x*cos(x) from -1 to 1 is:", result)
# Output below
Integral of e^x*cos(x) from -1 to 1 is: 1.9333904692742745
```

 # part 2

```
# lower limit a and upper limit b
b = 1.5
a = 0.5

# linear transformation of x to x_new
x_new = ((b - a)*x + (b + a))/2

result = (b - a)/2 * np.sum(w * np.exp(x_new) * np.cos(x_new))

print("Integral of e^x*cos(x) from 0.5 to 1.5 is:", result)
# Output below
Integral of e^x*cos(x) from 0.5 to 1.5 is: 1.275069036582399
```