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TUGAS METODE NUMERIK

1. Gunakan metode trapesium unuk menghampiri nilai $\int_0^1 \cos(\sin x)\ dx$ dengan n = 10.

```
const trapesium = () => {
  for (let i = 0; i <= n; i++) {
    if(i == 0 || i == n) {
      C[i] = 1;
    } else {
      C[i] = 2;
    }
  }
  return h/2*sum;
}
```

f(0.000)=1.000
C[i]=1, C[i]f(0.000)=1.000
---
f(0.100)=0.995
C[i]=2, C[i]f(0.100)=1.990
---
f(0.200)=0.980
C[i]=2, C[i]f(0.200)=1.961
---
f(0.300)=0.957
C[i]=2, C[i]f(0.300)=1.913
---
f(0.400)=0.925
C[i]=2, C[i]f(0.400)=1.850
---
f(0.500)=0.887
C[i]=2, C[i]f(0.500)=1.775
---
f(0.600)=0.845
C[i]=2, C[i]f(0.600)=1.690
---
f(0.700)=0.800
C[i]=2, C[i]f(0.700)=1.599
---
f(0.800)=0.754
C[i]=2, C[i]f(0.800)=1.507
---
f(0.900)=0.709
C[i]=2, C[i]f(0.900)=1.417
---
f(1.000)=0.666
C[i]=1, C[i]f(1.000)=0.666
---
final result: 0.8684

2. Gunakan metode Simpson untuk menghampiri nilai $\int_0^1 \frac{4}{1+x^2}\, dx$ dengan n = 8.

```
const simpson = () => {
  for (let i = 0; i <= n; i++) {
    if(i == 0 || i == n) {
      C[i] = 1;
    } else {
      if(i % 2 == 0) {
        C[i] = 2;
      } else {
        C[i] = 4;
      }
    }
    sum += f(i*h+a)*C[i];
  }
  return h/3*sum;
}
```

f(0.000)=4.000
C[i]=1, C[i]f(0.000)=4.000
---
f(0.125)=3.938
C[i]=4, C[i]f(0.125)=15.754
---
f(0.250)=3.765
C[i]=2, C[i]f(0.250)=7.529
---
f(0.375)=3.507
C[i]=4, C[i]f(0.375)=14.027
---
f(0.500)=3.200
C[i]=2, C[i]f(0.500)=6.400
---
f(0.625)=2.876
C[i]=4, C[i]f(0.625)=11.506
---
f(0.750)=2.560
C[i]=2, C[i]f(0.750)=5.120
---
f(0.875)=2.265
C[i]=4, C[i]f(0.875)=9.062
---
f(1.000)=2.000
C[i]=1, C[i]f(1.000)=2.000
---
final result: 3.14159