Please clearly show all your work on the following problems.

1) Find the integral below.

 $\int x \cos(x) \, dx$

2) Find the first 5 terms in the sequence below.

 $\left\{\frac{2}{n}\right\}$

3) Find the first 5 terms in the series below.



4) Find the integral below.

$$\int_{-1}^{1} \frac{1}{\sqrt{|x|}} dx$$