

```
g[x_] := 2 * x;
```

```
bn =  $\int_{-1}^1 g[x] * \text{Sin}[n * \pi * x] dx$ 
```

$$\frac{-4 n \pi \text{Cos}[n \pi] + 4 \text{Sin}[n \pi]}{n^2 \pi^2}$$

$$\frac{-4 n \pi * (-1)^n}{n^2 \pi^2} * \text{Sin}[n * \pi * x]$$

$$-\frac{4 (-1)^n \text{Sin}[n \pi x]}{n \pi}$$

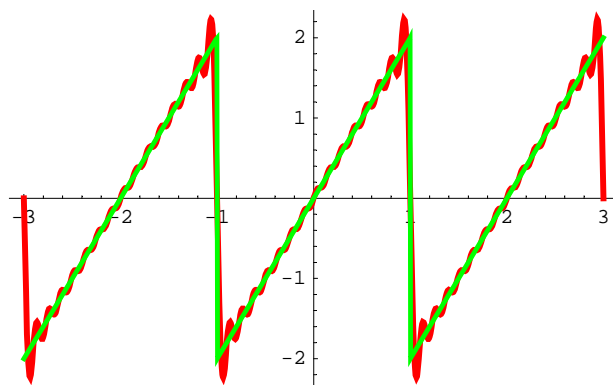
```
D[ $\frac{4}{n^2 * \pi^2} * (-1)^n * \text{Cos}[n * \pi * x]$ , x]
```

$$-\frac{4 (-1)^n \text{Sin}[n \pi x]}{n \pi}$$

```
g[x_] := Which[-3 < x < -1, 2 * (x + 2), -1 < x < 1, 2 * x, 1 < x < 3, 2 * (x - 2)];
```

```
Plot[ $\left\{ \sum_{n=1}^{15} -\frac{4 (-1)^n \text{Sin}[n \pi x]}{n \pi}, g[x] \right\}$ , {x, -3, 3}, PlotStyle ->
```

```
{ {RGBColor[1, 0, 0], Thickness[0.01]}, {RGBColor[0, 1, 0], Thickness[0.008]} }]
```



- Graphics -