```
f[n_] := Sum[ Binomial[n, k] (-1)^k / (2 k + 1), {k, 0, n}]
```

```
N[f[13]]
```

0.238978

```
Sum[ Binomial[n, k] (-1)^k / (2 k + 1), {k, 0, n}]
```

$$\frac{(2\,n)!!}{(1+2\,n)!!}$$

```
5!!
```

15

```
6!!
```

48

```
6!
```

720

```
ff[p_] := Sum[ Binomial[p, j] B[p - j, 1] / (j + 1) n^(j + 1), {j, 0, p}]
```

```
ff[1]
```

$$\frac{1}{2}\,n^2\,B[0,\,1]+n\,B[1,\,1]$$

```
ff[2]
```

$$\frac{1}{3}\,n^3\,B[0]+n^2\,B[1]+n\,B[2]$$

```
ff[3]
```

$$\frac{1}{4}\,n^4\,B[0]+n^3\,B[1]+\frac{3}{2}\,n^2\,B[2]+n\,B[3]$$

```
ff[5]
```

$$\frac{1}{6}\,n^6\,B[0]+n^5\,B[1]+\frac{5}{2}\,n^4\,B[2]+\frac{10}{3}\,n^3\,B[3]+\frac{5}{2}\,n^2\,B[4]+n\,B[5]$$

```
ff[6]
```

$$\frac{1}{7}\,n^7\,B[0]+n^6\,B[1]+3\,n^5\,B[2]+5\,n^4\,B[3]+5\,n^3\,B[4]+3\,n^2\,B[5]+n\,B[6]$$

```
Table[ BernoulliB[k, 1], {k, 0, 10}]
```

$$\left\{1,\,\frac{1}{2},\,\frac{1}{6},\,0,\,-\frac{1}{30},\,0,\,\frac{1}{42},\,0,\,-\frac{1}{30},\,0,\,\frac{5}{66}\right\}$$

```
ff[12] /. B → BernoulliB
```

$$-\frac{691\,n}{2730}+\frac{5\,n^3}{3}-\frac{33\,n^5}{10}+\frac{22\,n^7}{7}-\frac{11\,n^9}{6}+n^{11}+\frac{n^{12}}{2}+\frac{n^{13}}{13}$$