```
e2[n_, k_] := e2[n, k] = Sum[e2[j, k - 1] e2[n / j, 1], {j, Divisors[n]}];
e2[n_, 1] := (-1)^(n + 1); e2[1, 1] := 0; e2[n_, 0] := 0; e2[1, 0] := 1
E2[n_, k_] := E2[n, k] = Sum[ e2[j, k], {j, 2, n}]
l2[n_] := l2[n] = Sum[(-1)^(k + 1) / k e2[n, k], {k, 1, Log[2, n]}]
L2[n_] := L2[n] = Sum[(-1)^(k + 1) / k E2[n, k], {k, 1, Log[2, n]}]
P2[n_, 0] := 1
P2[n_, k_] := P2[n, k] = Sum[ l2[j] P2[Floor[n / j], k - 1], {j, 2, n}]
Ex2[n_, z_] := Sum[ z^k / (k!) P2[n, k], {k, 0, Log[2, n]}]
```

```
P2[100, 2]
```

$$-\frac{419}{36}$$

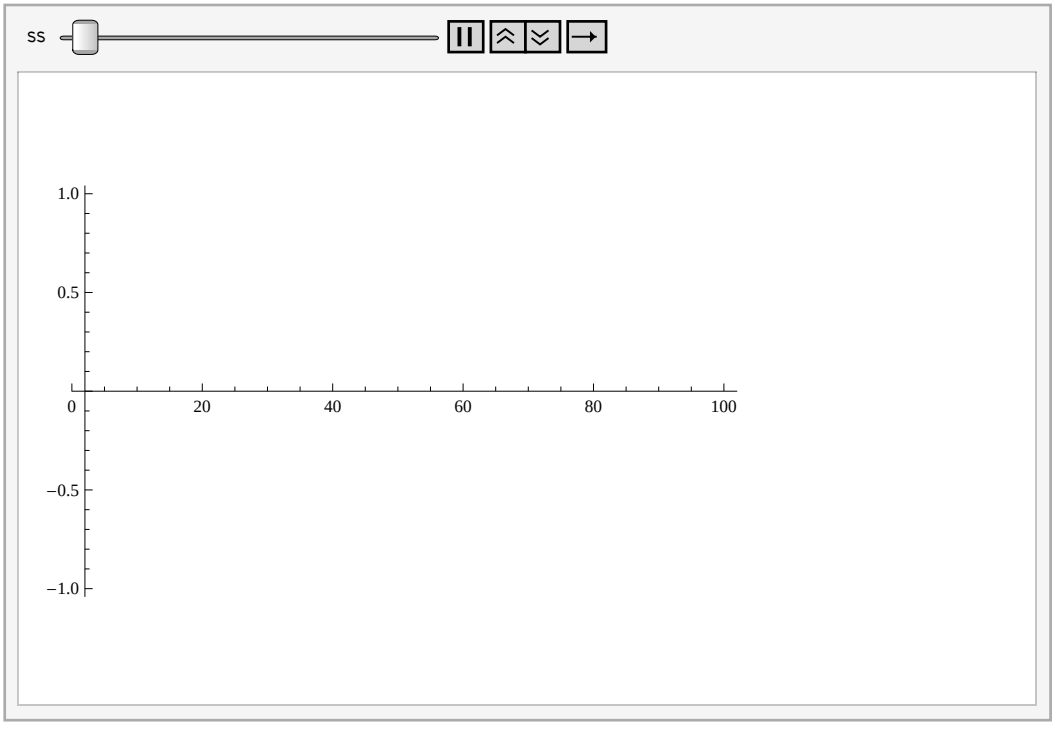
```
L2[100]
```

$$\frac{4}{5}$$

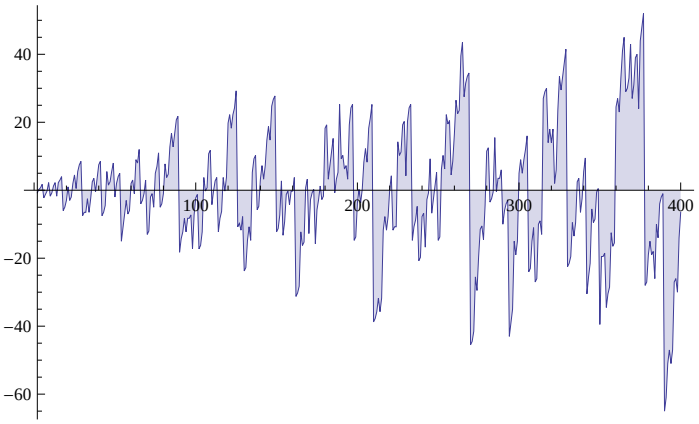
```
Ex2[100, -I]
```

$$\frac{371}{72} + \frac{109\,i}{24}$$

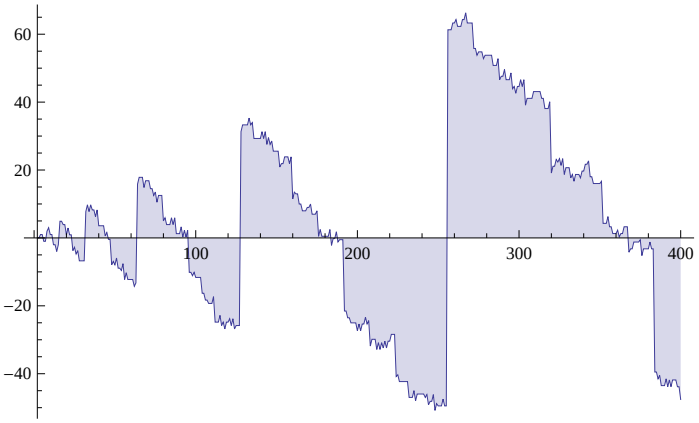
```
Animate[DiscretePlot[ Ex2[n, ss] / ss, {n, 2, 100}], {ss, -2, 2}]
```



```
DiscretePlot[ Ex2[n, ss = 4] / ss, {n, 2, 400}]
```




```
DiscretePlot[ P2[n, 2], {n, 2, 400}]
```




```
P2[100, 1]
```

$$\frac{4}{5}$$

```
E2[100, 2]
```

3

```
Sum[ (-1)^( k - j), {j, 2, 100}, {k, 2, Floor[100 / j]}]
```

3

```
Expand[E2[n, 1]]
```

$$-\frac{1}{2} - \frac{(-1)^n}{2}$$

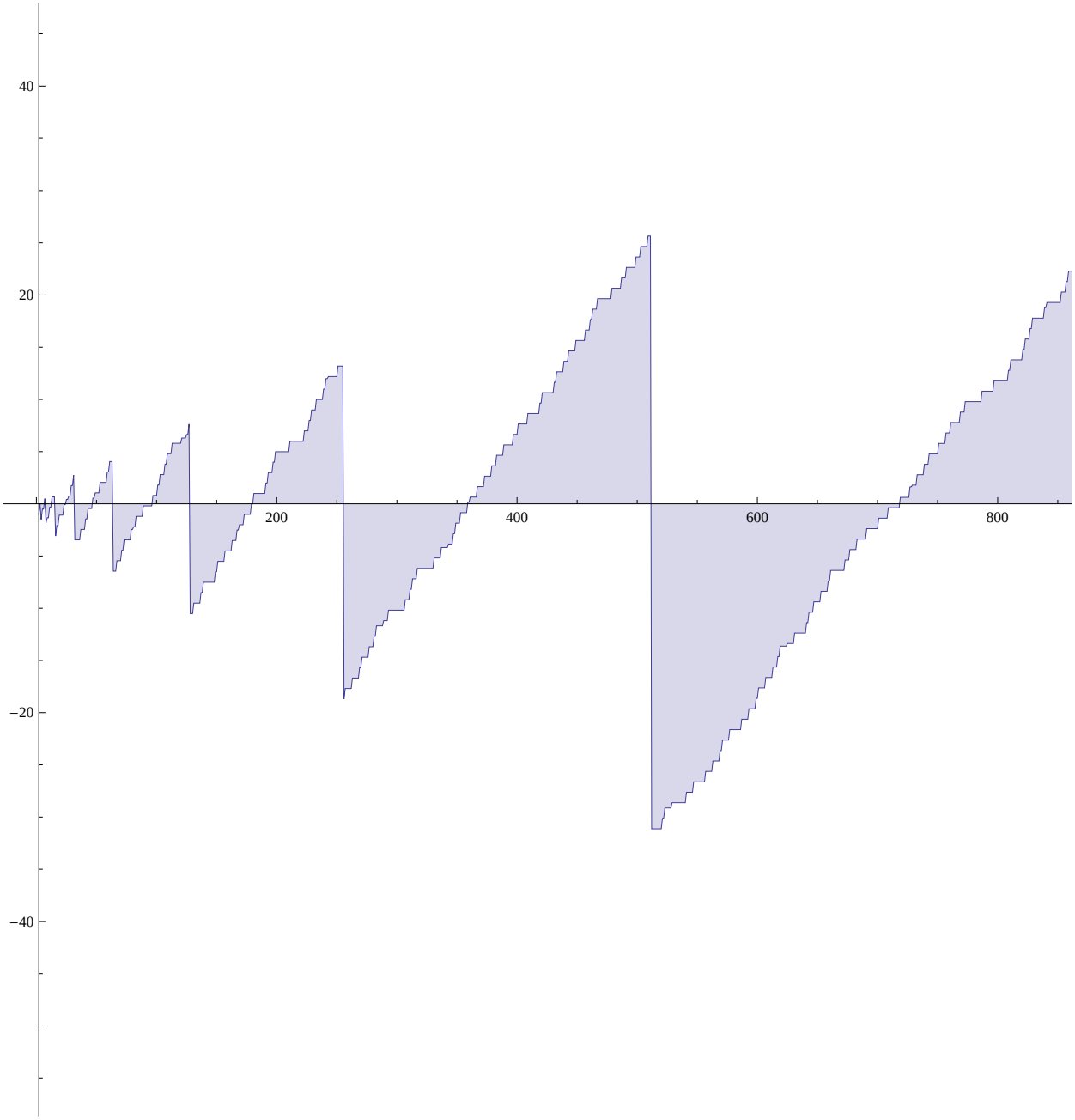
```
E2[x, 2]
```

0

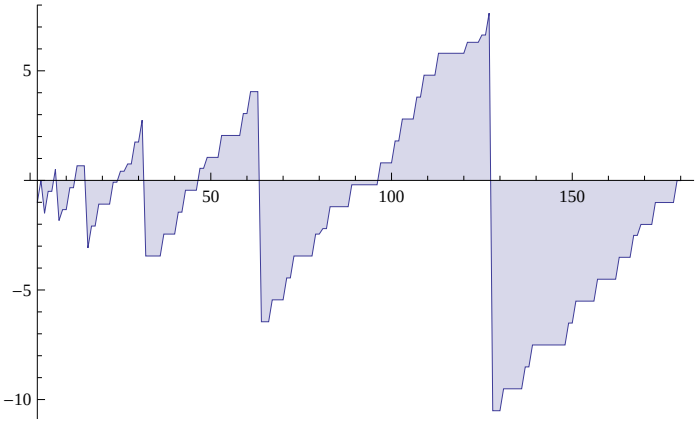
```
E2[14, 2]
```

−2

```
P2[n_, k_] := P2[n, k] = Sum[ (-1)^(j + 1) ( 1 / k - P2[Floor[n / j], k + 1]), {j, 2, n}]
DiscretePlot[ P2[n, 1], {n, 2, 90 * 16}]
```



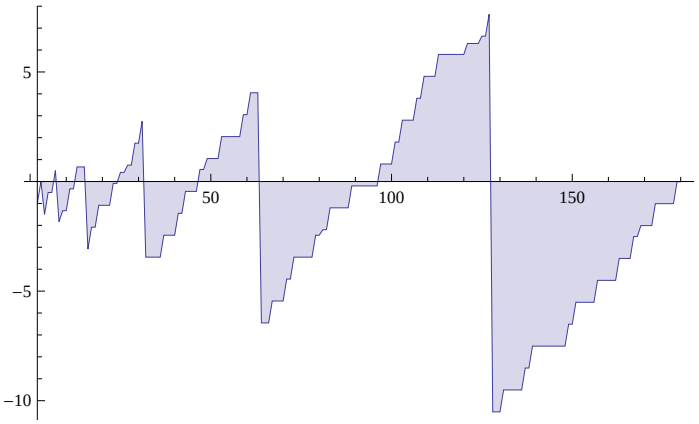
```
P2a[n_, k_] :=
 Sum[ (-1)^(j + 1) ( 1 / k ), {j, 2, n}] + Sum[ (-1)^(j + 1) ( - P2a[n / j, k + 1]), {j, 2, n}]
DiscretePlot[ P2a[n, 1], {n, 2, 90 * 2}]
```




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

$$-\frac{1}{2\,k}-\frac{(-1)^n}{2\,k}$$

```
P2a[n_, k_] :=
 Sum[ (-1)^(j + 1), {j, 2, n}] / k + Sum[ (-1)^(j + 1) ( - P2a[n / j, k + 1]), {j, 2, n}]
DiscretePlot[ P2a[n, 1], {n, 2, 90 * 2}]
```




```
Sum[ (-1)^(j + 1), {j, 2, n}]
```

$$\frac{1}{2}\,(-1-(-1)^n)$$

```
P2a[n_, k_] := -(1/2 (1 + (-1)^n)) / k + Sum[ (-1)^j ( P2a[Floor[n / j], k + 1]), {j, 2, n}]
DiscretePlot[ P2a[n, 1], {n, 2, 90 * 2}]
```