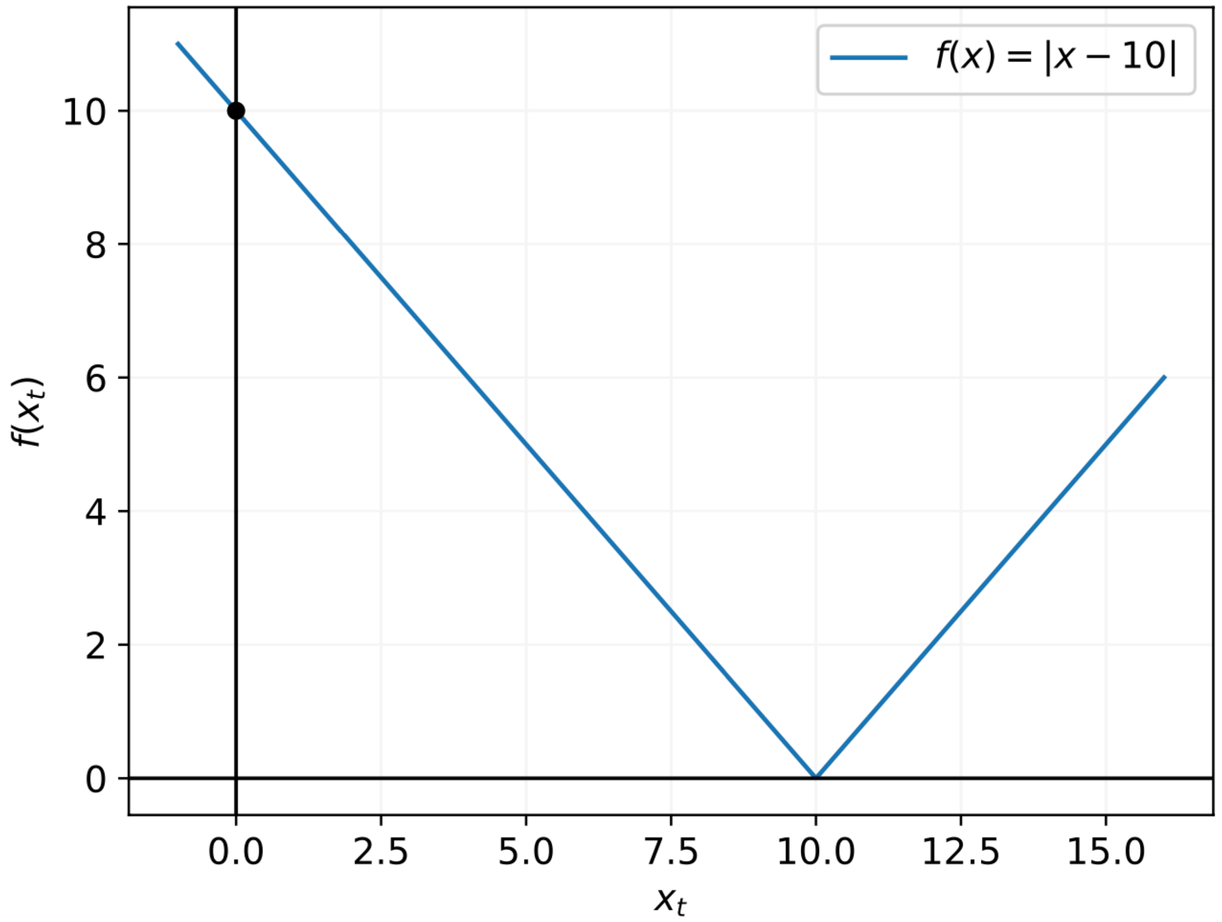


Initial wealth.

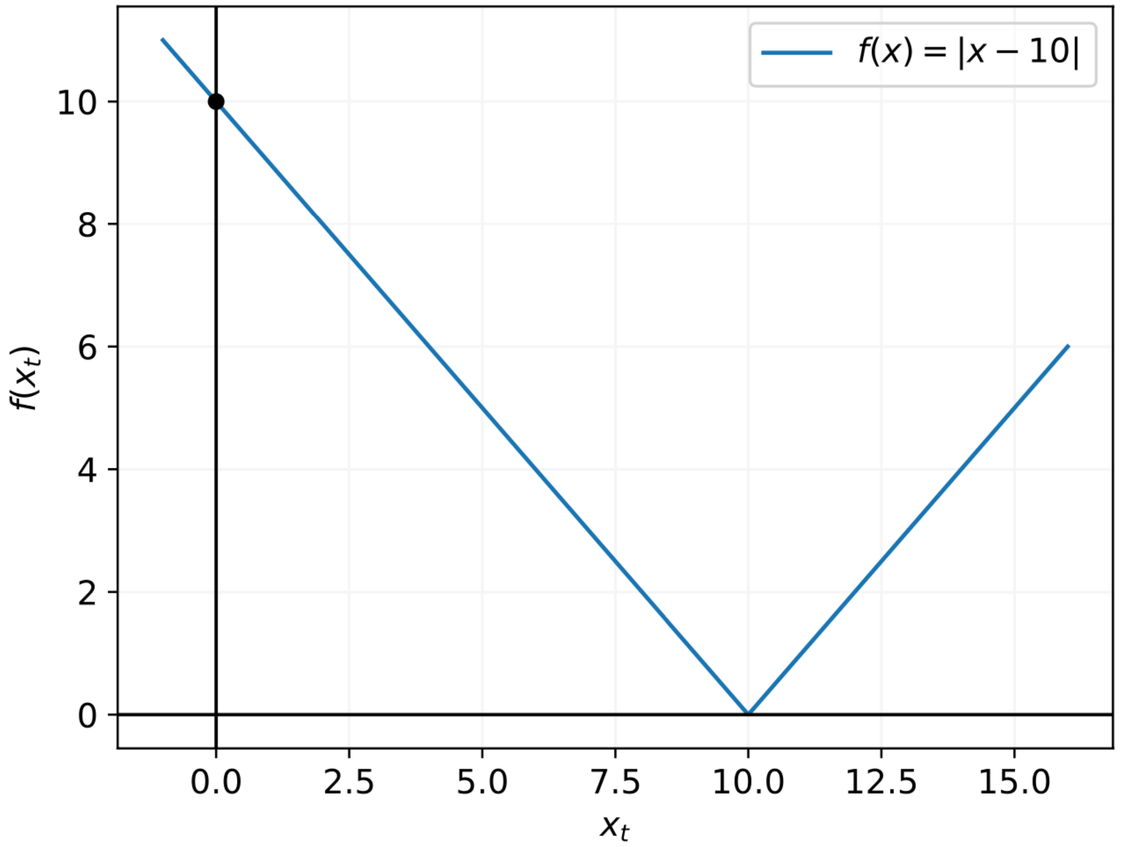
$w_0 = 1$

Betting fraction.

$$\beta_1 = \frac{\sum_{i=1}^{0} c_i}{1} = 0$$

Initial bet.

$x_1 = \beta_1 w_0 = 0.$



Current wealth.

$w_0 = 1$

Current bet.

$x_1 = 0$

Outcome.

$c_1 = -\nabla f(x_1) = 1$

New wealth.

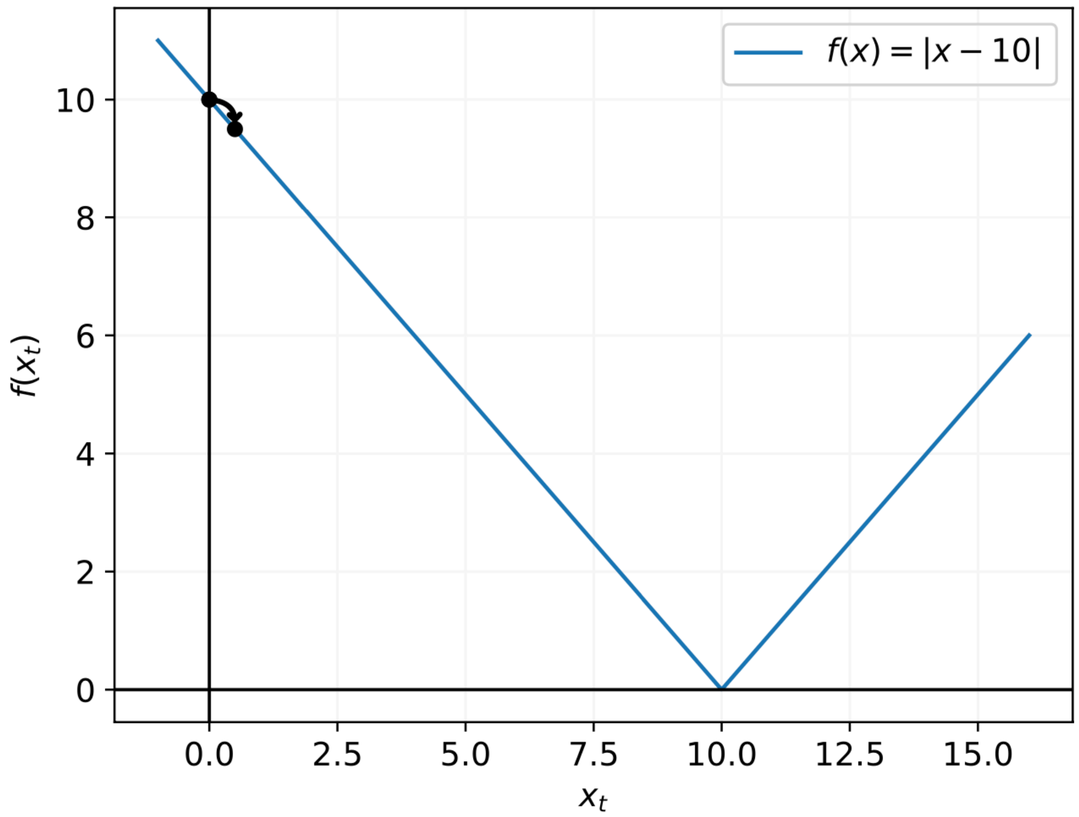
$w_1 = w_0 + c_1 x_1 = 1$

New betting fraction.

$$\beta_2 = \frac{\sum_{i=1}^{1} c_i}{2} = 0.5$$

New bet.

$x_2 = \beta_2 w_1 = 0.5.$



Current wealth.

$w_0 = 1$

Current bet.

$x_1 = 0$

Outcome.

$c_1 = -\nabla f(x_1) = 1$

New wealth.

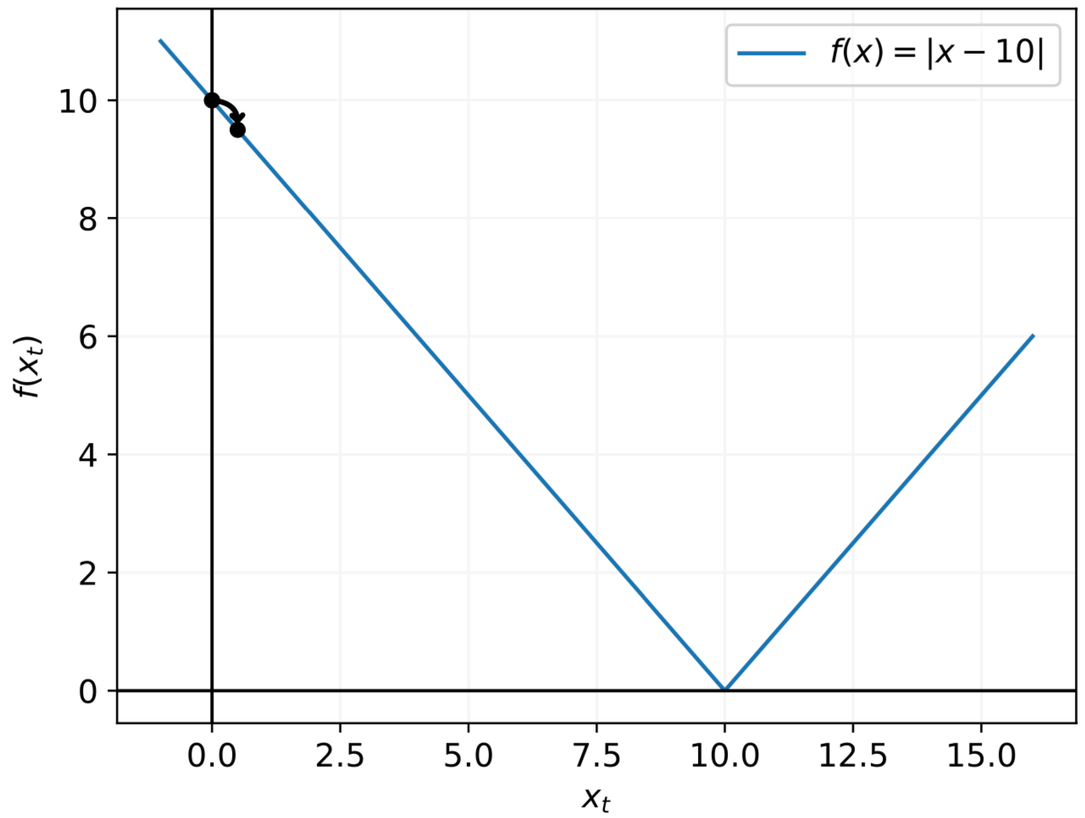
$w_1 = w_0 + c_1 x_1 = 1$

New betting fraction.

$$\beta_2 = \frac{\sum_{i=1}^{1} c_i}{2} = 0.5$$

New bet.

$x_2 = \beta_2 w_1 = 0.5.$



Current wealth.

$w_1 = 1$

Current bet.

$x_2 = 0.5$

Outcome.

$c_2 = -\nabla f(x_2) = 1$

New wealth.

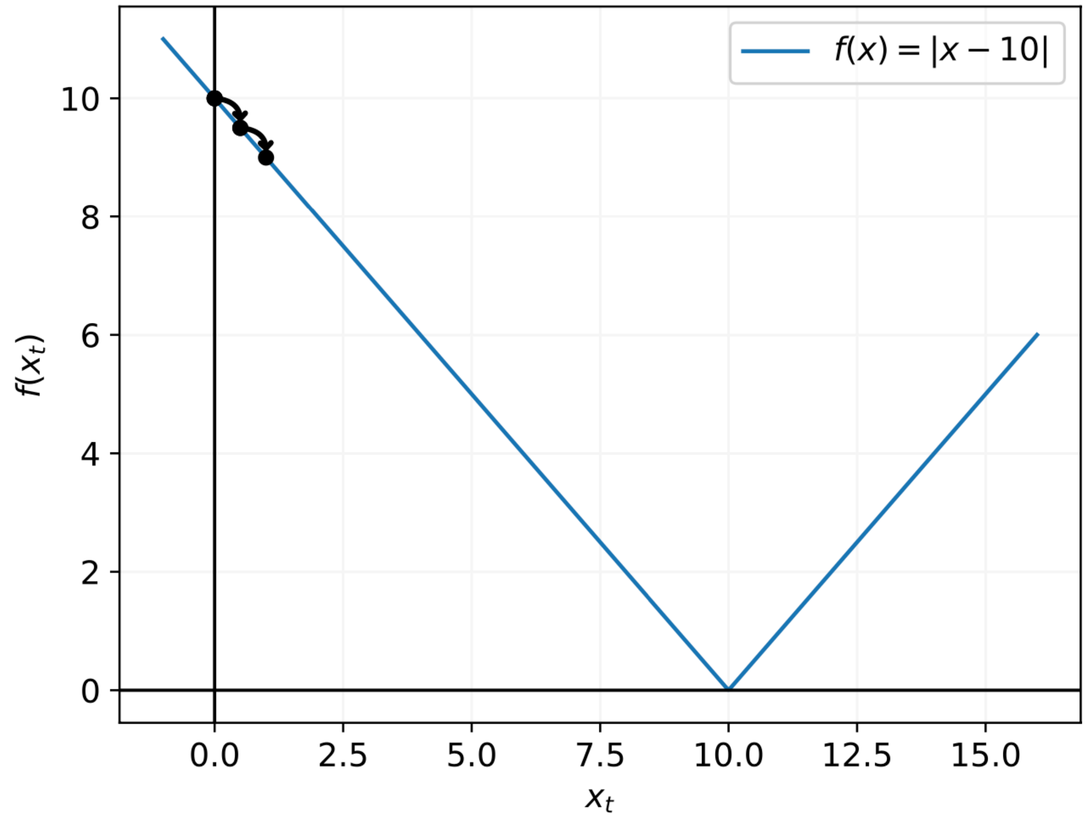
$w_2 = w_1 + c_2 x_2 = 1.5$

New betting fraction.

$$\beta_3 = \frac{\sum_{i=1}^{2} c_i}{3} = 0.\dot{6}$$

New bet.

$x_3 = \beta_3 w_2 = 1.$



Current wealth.

$w_1 = 1$

Current bet.

$x_2 = 0.5$

Outcome.

$c_2 = -\nabla f(x_2) = 1$

New wealth.

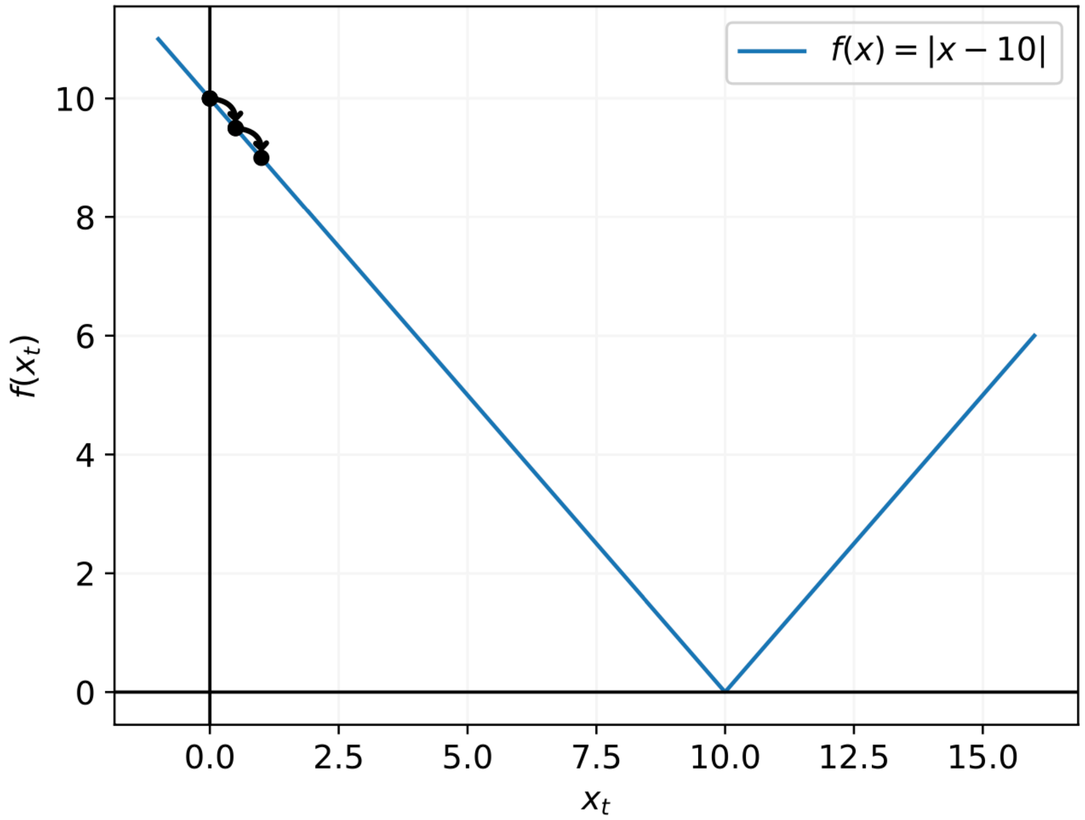
$w_2 = w_1 + c_2 x_2 = 1.5$

New betting fraction.

$$\beta_3 = \frac{\sum_{i=1}^{2} c_i}{3} = 0.\dot{6}$$

New bet.

$x_3 = \beta_3 w_2 = 1.$



Current wealth.

$w_2 = 1.5$

Current bet.

$x_3 = 1$

Outcome.

$c_3 = -\nabla f(x_3) = 1$

New wealth.

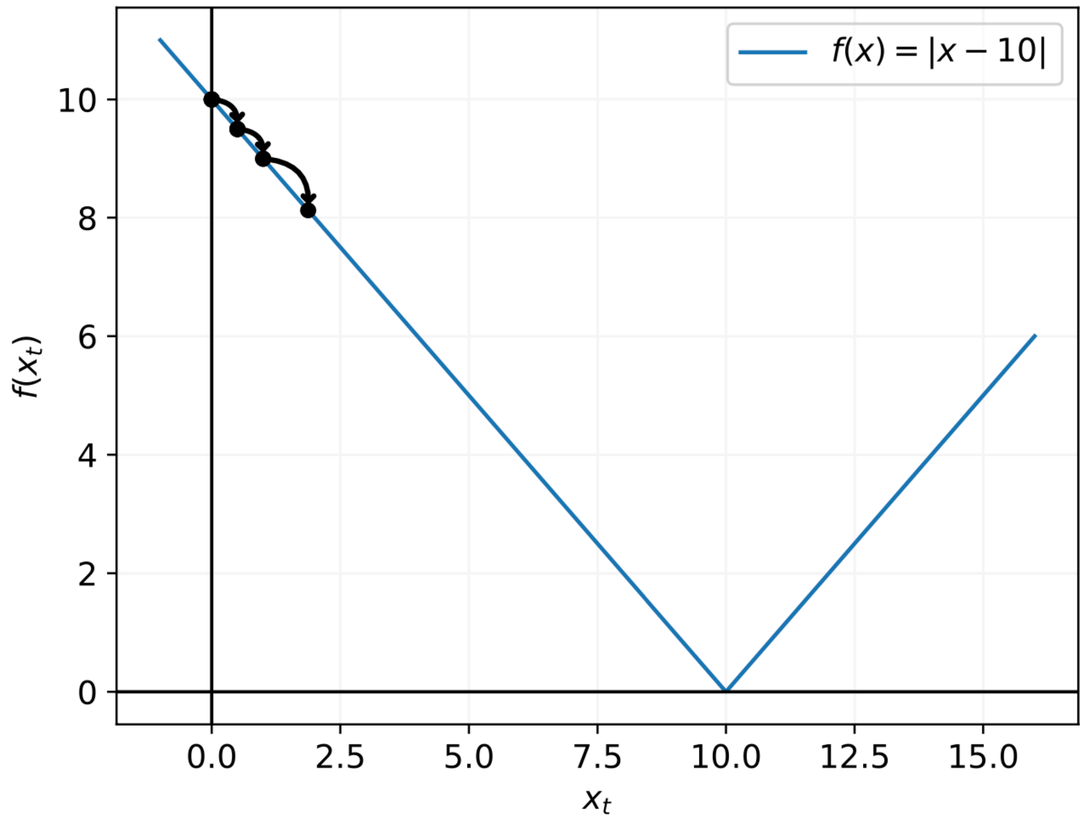
$w_3 = w_2 + c_3 x_3 = 2.5$

New betting fraction.

$$\beta_4 = \frac{\sum_{i=1}^{3} c_i}{4} = 0.75$$

New bet.

$x_4 = \beta_4 w_3 = 1.875$



Current wealth.

$w_2 = 1.5$

Current bet.

$x_3 = 1$

Outcome.

$c_3 = -\nabla f(x_3) = 1$

New wealth.

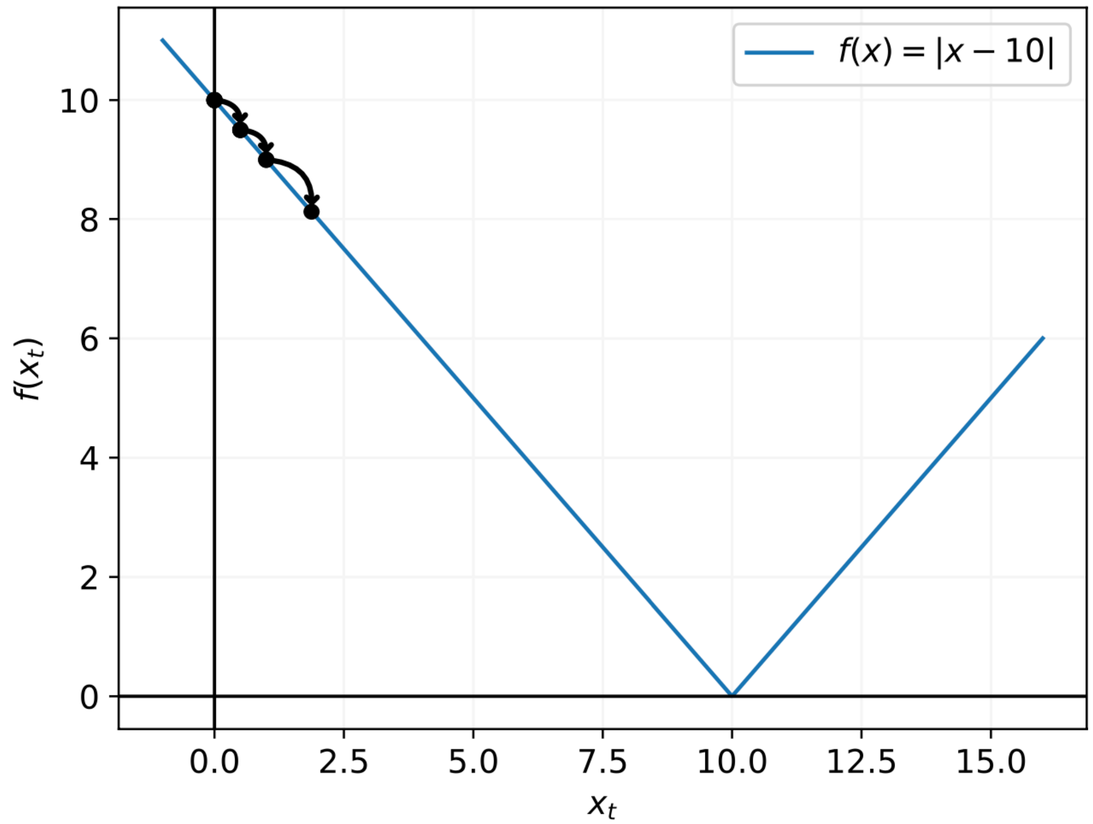
$w_3 = w_2 + c_3 x_3 = 2.5$

New betting fraction.

$$\beta_4 = \frac{\sum_{i=1}^{3} c_i}{4} = 0.75$$

New bet.

$x_4 = \beta_4 w_3 = 1.875$



Current wealth.

$w_3 = 2.5$

Current bet.

$x_4 = 1.875$

Outcome.

$c_4 = -\nabla f(x_4) = 1$

New wealth.

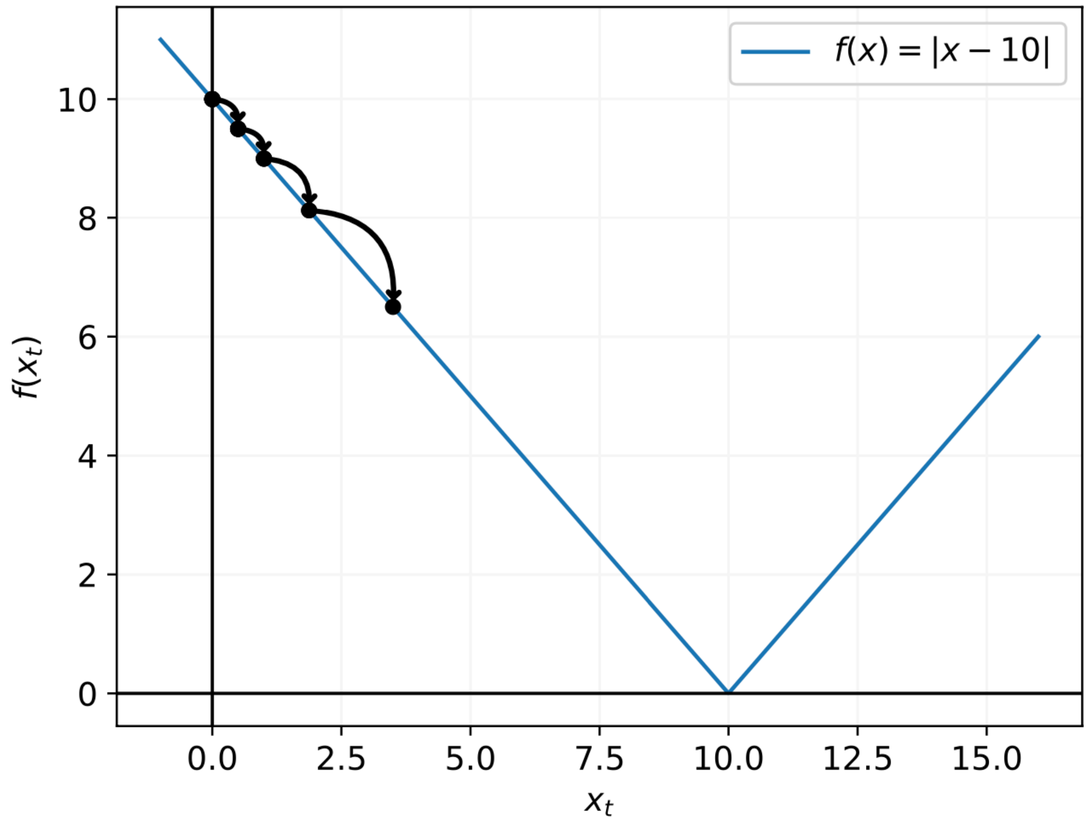
$w_4 = w_3 + c_4 x_4 = 4.375$

New betting fraction.

$$\beta_5 = \frac{\sum_{i=1}^{4} c_i}{5} = 0.8$$

New bet.

$x_5 = \beta_5 w_4 = 3.5$



Current wealth.

$w_3 = 2.5$

Current bet.

$x_4 = 1.875$

Outcome.

$c_4 = -\nabla f(x_4) = 1$

New wealth.

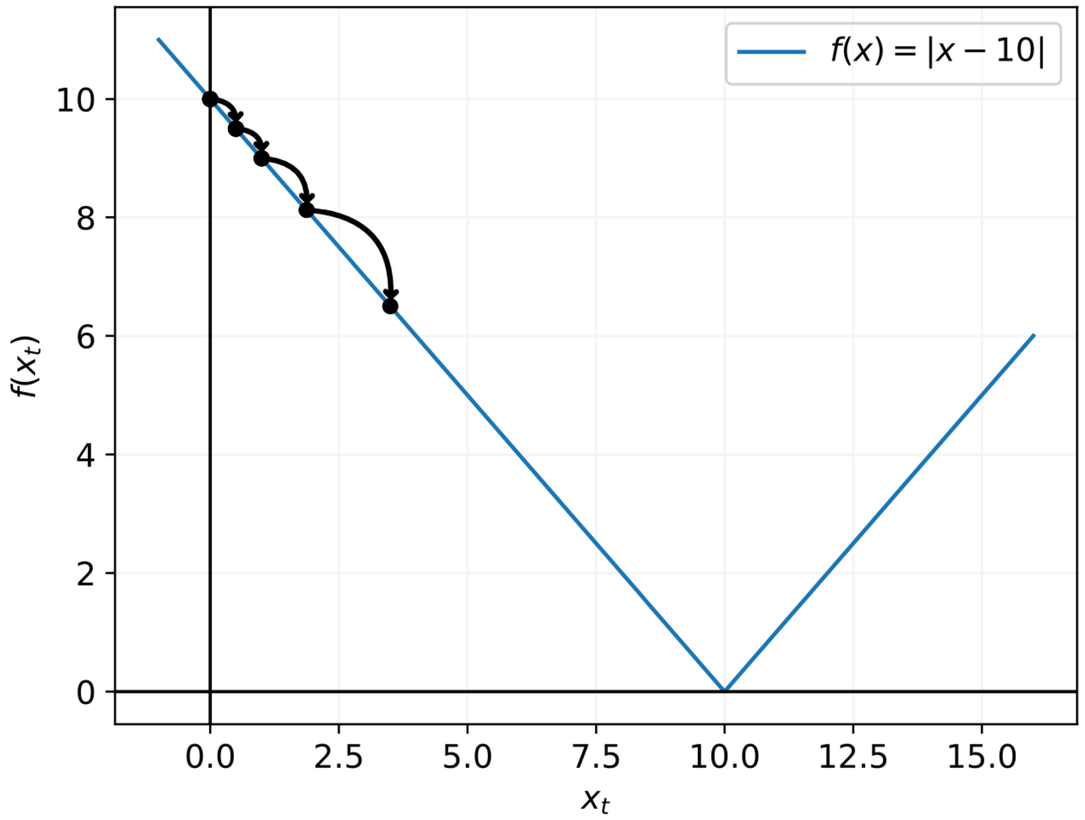
$w_4 = w_3 + c_4 x_4 = 4.375$

New betting fraction.

$$\beta_5 = \frac{\sum_{i=1}^{4} c_i}{5} = 0.8$$

New bet.

$x_5 = \beta_5 w_4 = 3.5$



Current wealth.

$w_4 = 4.375$

Current bet.

$x_5 = 3.5$

Outcome.

$c_5 = -\nabla f(x_5) = 1$

New wealth.

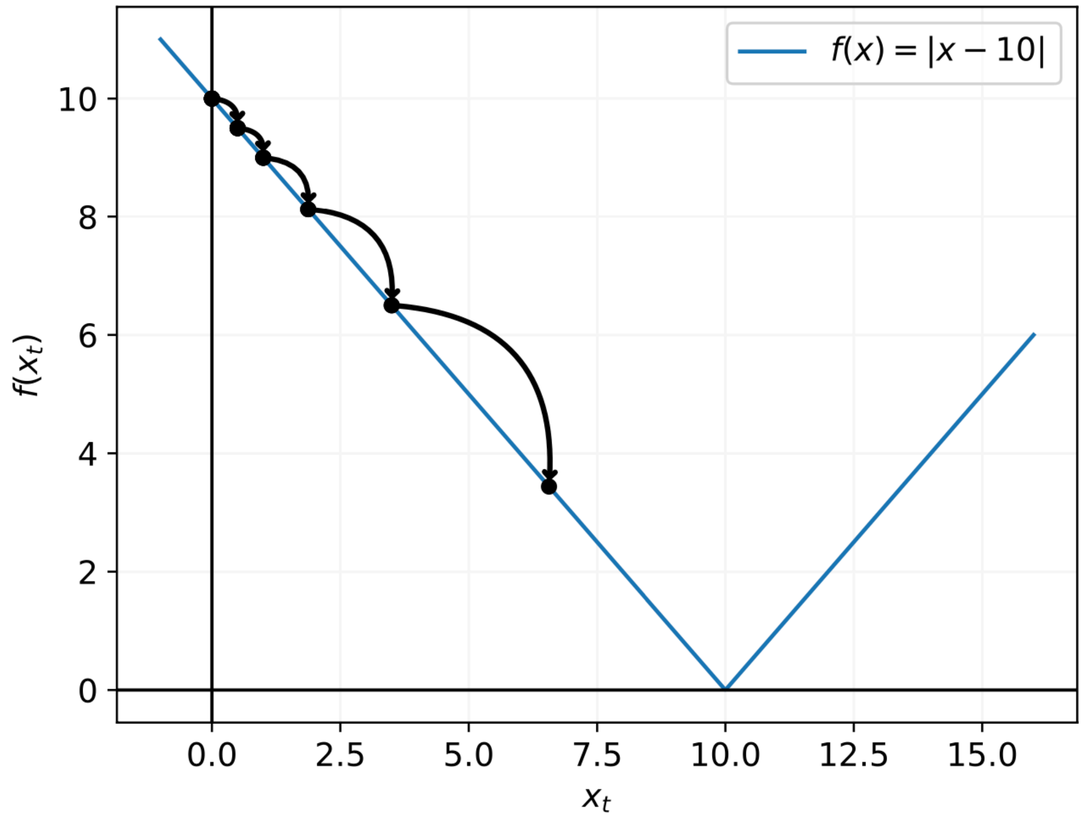
$w_5 = w_4 + c_5 x_5 = 7.875$

New betting fraction.

$$\beta_6 = \frac{\sum_{i=1}^{5} c_i}{6} = 0.8\dot{3}$$

New bet.

$x_6 = \beta_6 w_5 = 6.5625$



Current wealth.

$w_4 = 4.375$

Current bet.

$x_5 = 3.5$

Outcome.

$c_5 = -\nabla f(x_5) = 1$

New wealth.

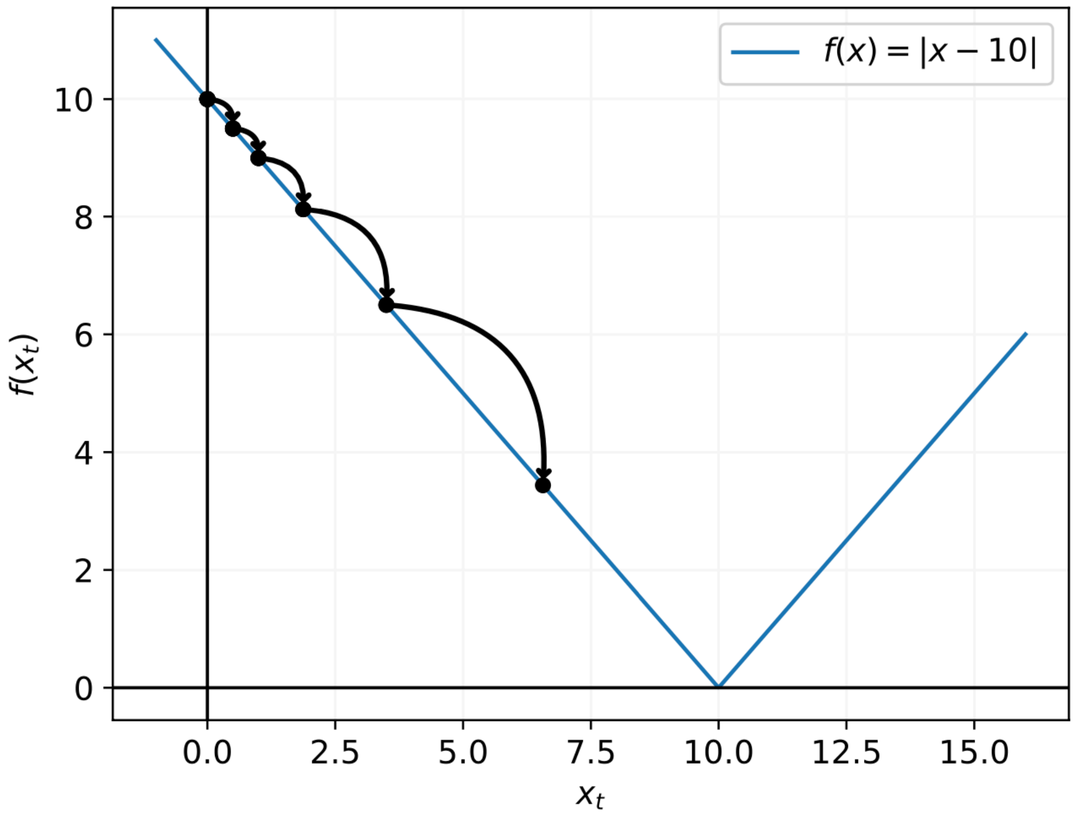
$w_5 = w_4 + c_5 x_5 = 7.875$

New betting fraction.

$$\beta_6 = \frac{\sum_{i=1}^{5} c_i}{6} = 0.8\dot{3}$$

New bet.

$x_6 = \beta_6 w_5 = 6.5625$



Current wealth.

$w_5 = 7.875$

Current bet.

$x_6 = 6.5625$

Outcome.

$c_6 = -\nabla f(x_6) = 1$

New wealth.

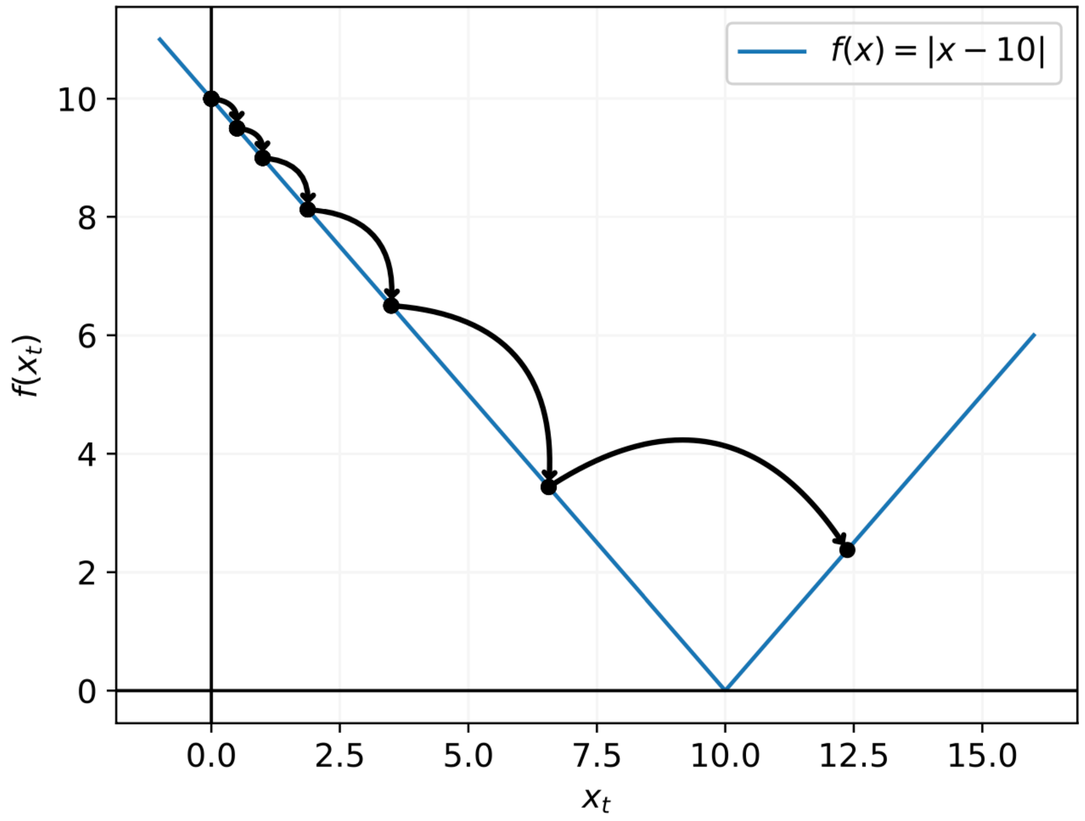
$w_6 = w_5 + c_6 x_6 = 14.4375$

New betting fraction.

$\beta_7 = \frac{\sum_{i=1}^{6} c_i}{7} = 0.\dot{8}57142\dot{8}$

New bet.

$x_7 = \beta_7 w_6 = 12.375$



Current wealth.

$w_5 = 7.875$

Current bet.

$x_6 = 6.5625$

Outcome.

$c_6 = -\nabla f(x_6) = 1$

New wealth.

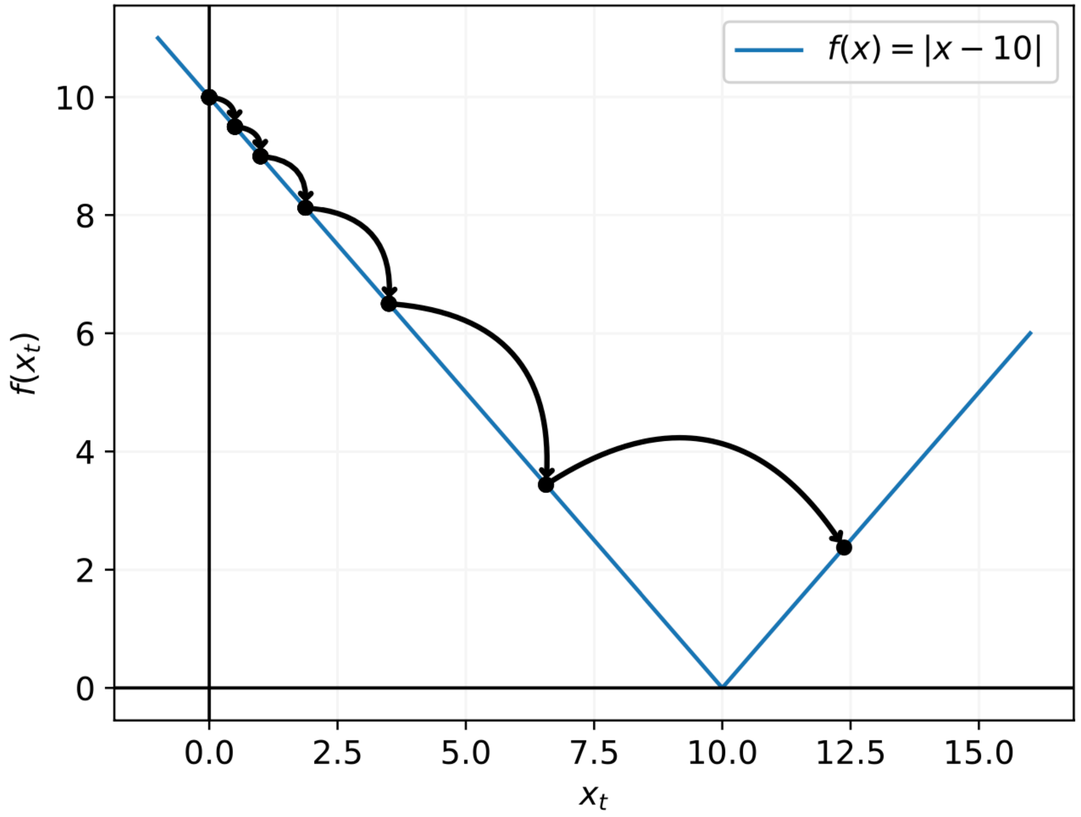
$w_6 = w_5 + c_6 x_6 = 14.4375$

New betting fraction.

$$\beta_7 = \frac{\sum_{i=1}^{6} c_i}{7} = 0.\dot{8}57142\dot{}$$

New bet.

$x_7 = \beta_7 w_6 = 12.375$



Current wealth.

$w_6 = 14.4375$

Current bet.

$x_7 = 12.375$

Outcome.

$c_7 = -\nabla f(x_7) = -1$

New wealth.

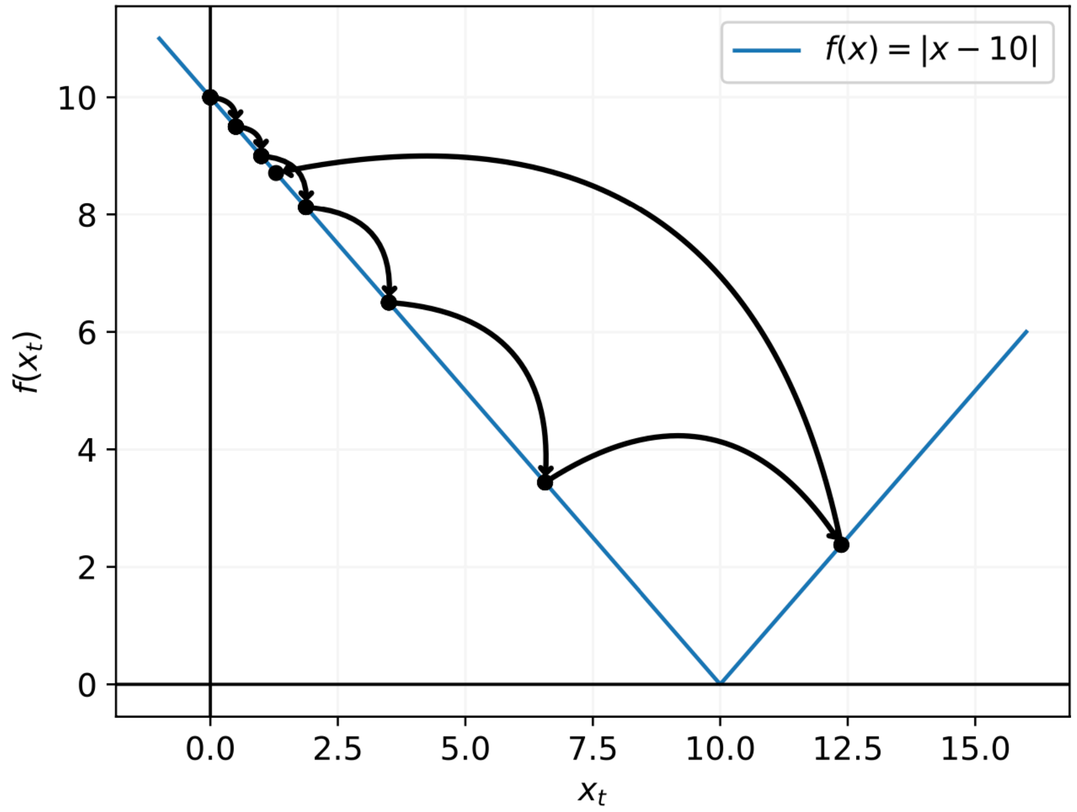
$w_7 = w_6 + c_7 x_7 = 2.0625$

New betting fraction.

$$\beta_8 = \frac{\sum_{i=1}^{7} c_i}{8} = 0.625$$

New bet.

$x_8 = \beta_8 w_7 = 1.2890625$



Current wealth.

$w_6 = 14.4375$

Current bet.

$x_7 = 12.375$

Outcome.

$c_7 = -\nabla f(x_7) = -1$

New wealth.

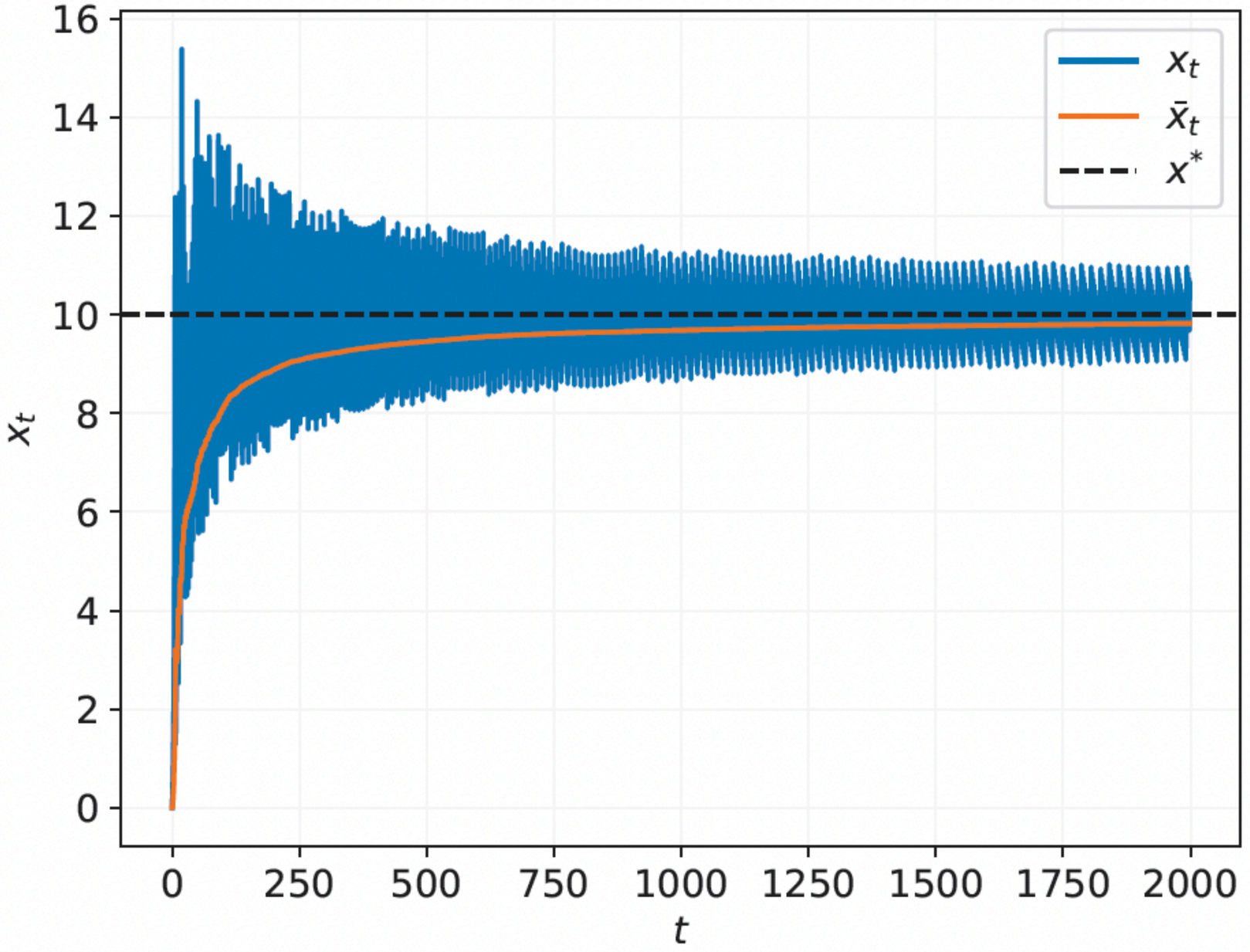
$w_7 = w_6 + c_7 x_7 = 2.0625$

New betting fraction.

$$\beta_8 = \frac{\sum_{i=1}^{7} c_i}{8} = 0.625$$

New bet.

$x_8 = \beta_8 w_7 = 1.2890625$


16
14
12
10
8
6
4
2
0
x_t
0
250
500
750
1000
1250
1500
1750
2000
t
x_t
$\bar{x}_t$
x^*