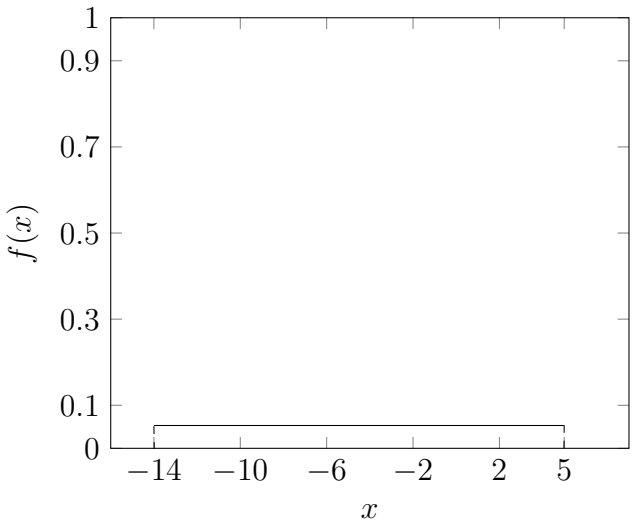
1 Задача

1.1 a)

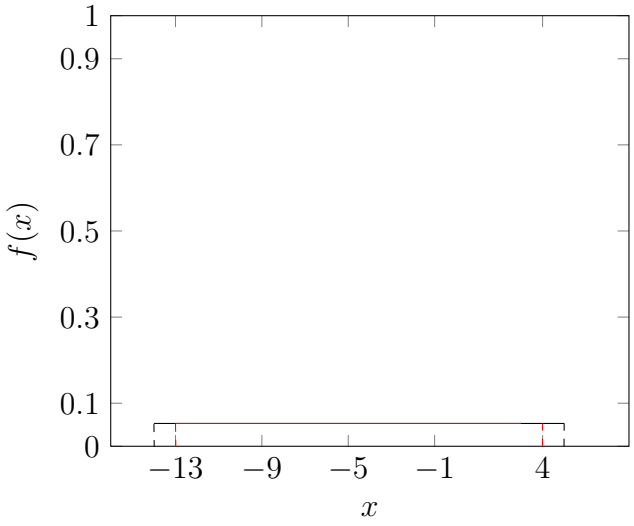
$U \in [-14; 5]$

$f(x) = \frac{1}{b-a} = \frac{1}{19} \approx 0,053$



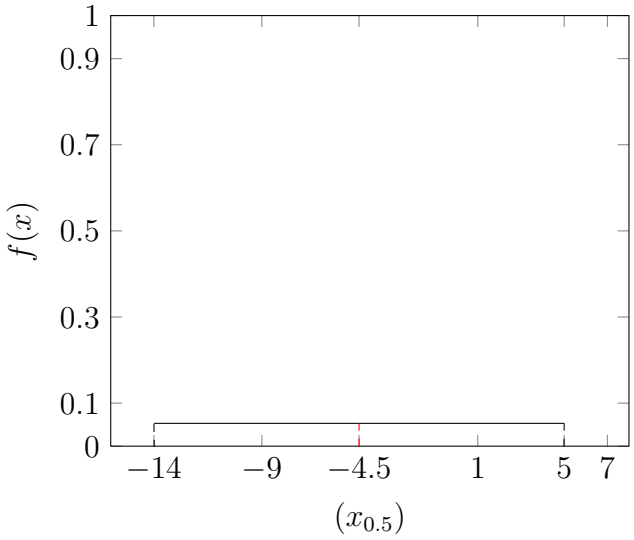
1.2 b)

$P(-13 < X < 4) = (4 - (-13)) * \frac{1}{19} = \frac{17}{19}$



1.3 c)

$X_{0,5} = \frac{5+(-14)}{2} = -4,5$



1.4 d)

$X_{0,6} : 0,6 = (X_{0,6} + 14) * \frac{1}{19}$

$11,4 = X_{0,6} + 14$

$X_{0,6} = -2,6$

2 Задача

a) $P(Z < 1,18) = 0,8810$

b) $P(Z < -0,80) = 1 - \Phi(0,80) = 1 - 0,7881 = 0,2119$

c) $P(Z > 0,73) = 1 - \Phi(0,73) = 1 - 0,7673 = 0,2327$

d) $P(Z > -2,59) = 1 - (1 - \Phi(2,59)) = \Phi(2,59) = 0,9952$

e) $P(1,48 < Z < 1,59) = \Phi(1,59) - \Phi(1,48) = 0,9441 - 0,9306 = 0,0135$

f) $P(-1,10 < Z < 2,34) = \Phi(2,34) - (1 - \Phi(1,10)) = 0,9904 - 0,1357 = 0,8547$

3 Задача

$X \sim N(\mu; \sigma^2) = N(2; \sigma^2 = 61) = N(2; \sigma \approx 7,8)$

$P(-2 < x < 6)$ - нужно стандартизировать данные

$Z_a = \frac{-2-2}{7,8} \approx -0,51$

$Z_b = \frac{6-2}{7,8} \approx 0,51$

$P(-0,51 < Z < 0,51) = \Phi(0,51) - (1 - \Phi(0,51)) = 0,6950 - 0,305 = 0,39$

4 Задача

$X \sim N(\mu; \sigma^2) = N(13; \sigma^2 = 49)$

a) $Z_{0,6808} = 0,47$

$Z = \frac{X-\mu}{\sigma}$

$0,47 = \frac{X-13}{7}$

$X_{0,6808} = 16,29$

b) $Z_{0,0136} : 1 - 0,0136 = 0,9864$

$Z_{0,0136} = -Z_{0,9864} = -2,21$

$-2,21 = \frac{X-13}{7}$

$X_{0,0136} = -2,47$