

# 1 Lab1

## 1.1 Step 1

$$\begin{aligned}x_n &= x_{10} = 10.000 \\x_{arif} &= \frac{x_1 + x_n}{2} = \frac{1.000 + 10.000}{2} = 5.500 \\x_{geom} &= \sqrt{x_1 * x_n} = \sqrt{1.000 * 10.000} = 3.162 \\x_{garm} &= \frac{2 * x_1 * x_n}{x_1 + x_n} = \frac{2 * 1.000 * 10.000}{1.000 + 10.000} = 1.818\end{aligned}$$

## 1.2 Step 2

$$\begin{aligned}y_1^* &= f(x_{arif}) = f(5.500) = 6.102 \\y_2^* &= f(x_{geom}) = f(3.162) = 4.436 \\y_3^* &= f(x_{garm}) = f(1.818) = 2.701\end{aligned}$$

## 1.3 Step 3

$$\begin{aligned}y_n &= y_{10} = 7.908 \\y_{arif} &= \frac{y_1 + y_n}{2} = \frac{1.000 + 7.908}{2} = 4.454 \\y_{geom} &= \sqrt{y_1 * y_n} = \sqrt{1.000 * 7.908} = 2.812 \\y_{garm} &= \frac{2 * y_1 * y_n}{y_1 + y_n} = \frac{2 * 1.000 * 7.908}{1.000 + 7.908} = 1.775\end{aligned}$$

## 1.4 Step 4

$$\begin{aligned}\varepsilon_1 &= |y_1^* - y_{arif}| = |6.102 - 4.454| = 1.648 \\\varepsilon_2 &= |y_1^* - y_{geom}| = |6.102 - 2.812| = 3.290 \\\varepsilon_3 &= |y_1^* - y_{garm}| = |6.102 - 1.775| = 4.326 \\\varepsilon_4 &= |y_2^* - y_{arif}| = |4.436 - 4.454| = 0.018 \\\varepsilon_5 &= |y_2^* - y_{geom}| = |4.436 - 2.812| = 1.624 \\\varepsilon_6 &= |y_3^* - y_{arif}| = |2.701 - 4.454| = 1.753 \\\varepsilon_7 &= |y_3^* - y_{garm}| = |2.701 - 1.775| = 0.926\end{aligned}$$