№1 Бер:
$R = 20$ Ом
$R_x - ?$

Шешуі:
$P = I^2 R$
$R_1 = 20 + 20 = 40$
$\frac{1}{R_2} = \frac{1}{20} + \frac{1}{40} = \frac{3}{40}$
$R_2 = \frac{40}{3}$ Ом

$I_2 = \frac{U}{40+2} = \frac{U}{\frac{40}{3}+R_1} = \frac{U^2 \cdot 40}{(40+R_x)^2} = \frac{U^2 \cdot \frac{40}{3}}{(\frac{40}{3}+R_x)^2} =$

$\frac{120}{(40+3R_x)^2} = \frac{40}{(40+R_x)^2} = \frac{3}{1600+240R_x+9R_x^2}$

$= \frac{1}{1600+80R_x+R_x^2} = 230.$ Ж: $R_x = 230$ м

№2 $d_1 = 3{,}5$ дм
$L = 7{,}5$ дм

$\frac{1}{a} + \frac{1}{d} = \frac{1}{f}$
$\frac{1}{a} = \frac{1}{f} - \frac{1}{d}$
$\frac{1}{a} = \frac{d-f}{df}$

$\alpha = \frac{df}{d-f} = \frac{3{,}5 \cdot 1{,}5}{3{,}5-1{,}5} = 2{,}6$

№3 Бер:
$R = 200$ Ом
$\eta = 80\%$
$U = 220$ В
$t = 25$ мин $= 1500$ с
$t = 80°$
$V = 0{,}6$ м
$C = 4200$ Дж/кг
$\rho = 1000$ кг/м^3
$m - ?$

Шешуі:
$Q = \frac{U^2}{R} \cdot t = \frac{220^2}{200} \cdot 1500 = 363\,000$
$Q = cmt$
$m = \frac{Q}{c \cdot t} = \frac{363\,000}{4200 \cdot 20} = \frac{363\,000}{84\,000} = 4$ кг

№4 Бер:
$h_1 = 30$ мм
$h_2 = 60$ мм
$\rho_к = 2700$ кг/м^3
$\rho_м = 900$ кг/м^3

Шешуі:
$(\rho_к h_1 + \rho_м x) \cdot g = \rho_м \cdot h_2 g$
$\rho_к \rho_к + \rho_м \cdot x = \frac{\rho_к \cdot h_2 \cdot g}{g} = 2700 \cdot 60 \cdot 10^{-3} \cdot 10$
$\rho_м \cdot x = 162 - \rho_к \cdot h_1$
$\rho_м \cdot x = 162 - 2700 \cdot 30 \cdot 10^{-3}$
$\rho_м \cdot x = 162 - 81$
$\rho_м \cdot x = 81$
$x = \frac{81}{\rho_м} = \frac{81}{900} = 0{,}09$
$x = 0{,}09$
$\rho_м h_2 \cdot g = \rho_к \cdot h_1 \cdot g$
$h_2 = \frac{\rho_к \cdot h_1 \cdot g}{\rho_м \cdot g} = \frac{2700 \cdot 60 \cdot 10^{-3}}{900} = 0{,}18$ м