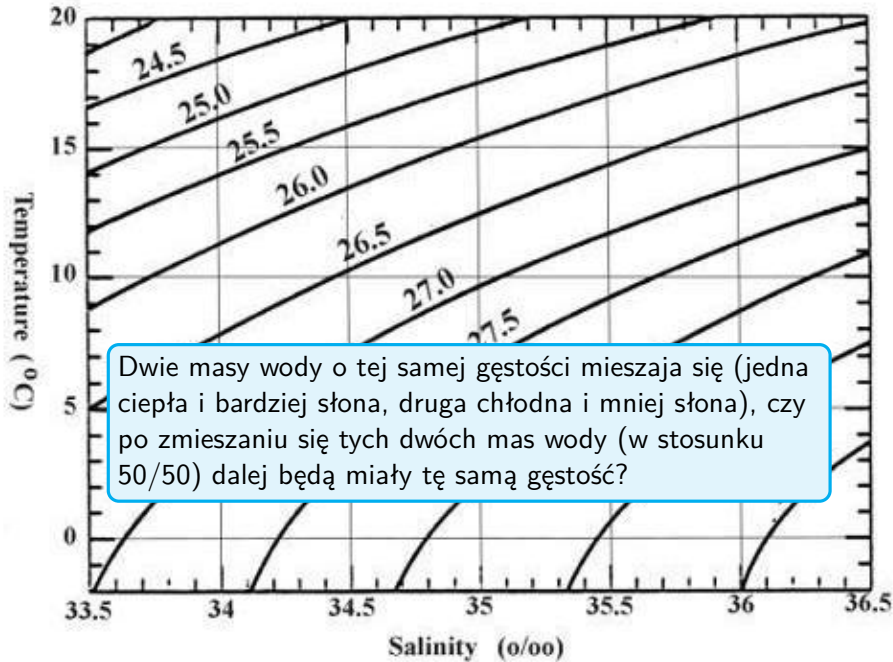
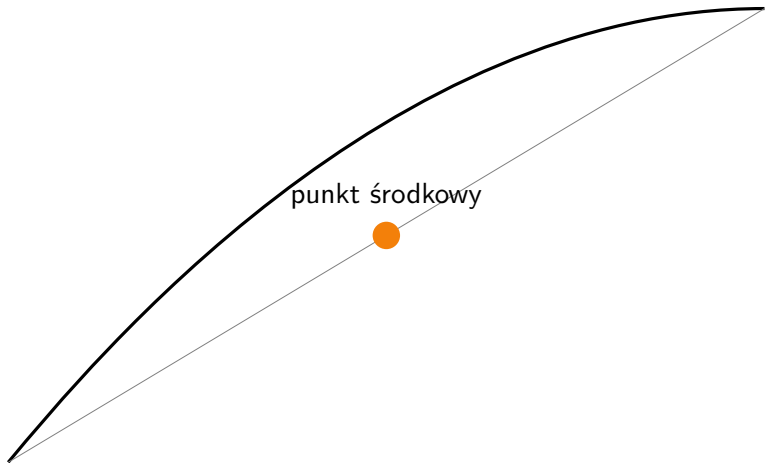


Czy zmiana temperatury wody o 5°C powoduje większą zmianę gęstości w obszarach równikowych czy polarnych?





punkt środkowy

Wzór na zmianę gęstości dla małych zmian temperatury i zasolenia

$$\rho = \rho_0 [1 + \beta(S - S_0) - \alpha(T - T_0)]$$

In the expression above S is salinity, T is temperature, β is the haline coefficient and α is the thermal coefficient. S_0 and T_0 are reference values that you can choose freely and $\rho_0 = \rho(S_0, T_0)$. The values of α and β depends on what values you choose for S_0 and T_0 . If we choose $S_0 = 34.6$ and $T_0 = 0.5^\circ\text{C}$ then $\rho_0 = \rho(S_0, T_0) = 1027.8 \text{ kg/m}^3$, $\alpha \approx 5.77 \cdot 10^{-5} \text{ C}^{-1}$ and $\beta \approx 7.84 \cdot 10^{-4}$.

When the temperature increases the density decreases – that means that 1 kg of warm water occupies a larger space than 1 kg of cold water. A large part of the sea level rise that we are observing today (and that we will see in the future) is caused by the increase in temperature of water at depth in the ocean. If water which is 4000m deep (with S_0 , T_0 , ρ_0 , β and α as given in exercise 3) is heated by 1°C , how much will the sea level then rise?