Heat Transfer Problem Sheet

1. Imagine that you mix 1 kilogram of water at 60˚C with 1 kilogram of water at 4˚C. What is the final temperature of the mixture?

2. What volume of antifreeze is necessary to cool a hot engine from 200˚C to 150˚C? Assume the engine is made of steel with a specific heat of 0.45 kJ/kg˚C and has a mass of 300 kg. The antifreeze is 50% water/50% ethylene glycol with a specific heat of 3.33 kJ/kg˚C and a density of 1,050 kg/m^3. The initial temperature of the antifreeze is 20˚C.