Heats of Formation Homework

1) Find the heat of reaction for 2 H_3PO_4 + $Mg(OH)_2$ → $Mg_3(PO_4)_2$ + 6 H_2O.
$H^0_f(H_3PO_4)$ = -1278.6 kJ/mol, $H^0_f(Mg(OH)_2)$ = -924.7 kJ/mol,
$H^0_f(Mg_3(PO_4)_2)$ = -4022.9 kJ/mol, $H^0_f(H_2O)$ = -285.9 kJ/mol.

2) Using the information provided, determine the heat of reaction for the reaction:

_____ H_2S + _____ $Ca(OH)_2$ → _____ H_2O + _____ CaS
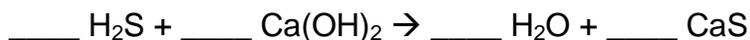
Compound	Standard heat of formation (kJ/mol)
calcium hydroxide	-986.6
calcium sulfide	-482.4
hydrosulfuric acid	-39.3
water	-285.9

3) Potassium iodide reacts with silver nitrate according to the reaction:

_____ KI + _____ $AgNO_3$ → _____ KNO_3 + _____ AgI
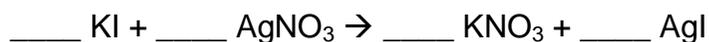
Find the heat of reaction for this process. The standard heat of formation of silver iodide is -62.4 kJ/mol, the standard heat of formation of silver nitrate is -100.7 kJ/mol, the standard heat of formation of potasium iodide is -313.5 kJ/mol, and the standard heat of formation of potassium nitrate is -457.8 kJ/mol.