a) $R_0^2 = 0.108$

$R_1^2 = 0.063$

$$F = \frac{(R_1^2 - R_0^2)/g}{(1-R_1^2)/(n-k)} = \frac{(0108-0.063)/4}{(1-0.108)/(87-6)} = \frac{0.011}{0.011} = 1$$

p-value = 0.413 Ho not rejected

b) $e_0'e_0 = 2.992$

$e_1'e_1 = 2.874$

$$F = \frac{(e_0'e_0 - e_1'e_1)/g}{(e_1'e_1)/(n-k)} = \frac{(2.992-2.874)/1}{2.874/(87-3)} = \frac{0.118}{0.034} = 3.471$$

p-value = 0.066 Ho not rejected

c) $S_0 = 2.992$

$S_1 = 1.981$

$S_2 = 0.855$

$$F = \frac{(S_0 - (S_1+S_2))/k}{(S_1+S_2)/(n-2k)} = \frac{(2.992-(1.981+0.855))/2}{(1.981+0.855)/(87-2\times2)} = \frac{0098}{0.034} = 2.294$$

p-value = 0.107 Ho not rejected

d) $$F = \frac{(S_0 - S_1)/r_2}{S_1/(n_1-k)} = \frac{(2.992-1.981)/34}{1.981/(53-2)} = \frac{0.030}{0.039} = 0.769$$

p-value = 0.789 Ho not rejected