Please solve two (not 3 not 1, 2)

1: Consider a consumer who chooses C_1 and C_2 to maximize
$\ln(C_1)+\ln(C_2)$

Subject to the budget constraint
$C_1+C_2 = W_1 + W_2$

With $W_1 = 3$ and
$W_2 = 19$ with probability 0.5
And = 1/19 with probability 0.5

a)What is C_1 (hint it is an integer) ?

b)Now what is C_1 if $W_2 = (19=1/19)/2$ (so $E(W_2)$ is the same as it was) ?

2. Consider a consumer who chooses 1: Consider a consumer who chooses C_1 and C_2 to maximize
$\ln(C_1)+\ln(C_2)$

Subject to the budget constraint
$C_1+C_2/(1+r) = W_1 = 1$

Find C_1 if

a) $r = 0$
b) $r = 0.1$

c) $r = 0$ with probability 0.5
   And $r = 0.2$ with probability 0.5

Ramsey Cass Koopmans

3: Consider a Solow growth model with no depreciation or population growth. The rate of technological progress $g = 0.01$.
1) $Y = 0.08K^{0.5}(AL)^{0.5}$
a) Ramsey Cass Koopmans Find the steady state capital to effective labour ratio if consumers act to maximize the presented discounted value of the square root of consumption the square root of consumption (so theta = 0,5) with a discount rate rho of 0.04
b) Draw a phase diagram of c and k illustrating the convergence to the steady state you found in a.
c)If rho = 0.001, the problem has no solution. Why can’t it be solved ?