Extra Credit

(a) $I = .2$ $\quad E = .8$ $\quad O = \dfrac{.2}{1-(1-.2)(.8)} \approx 55.6\%$

(b) $I = 1 = 100\%$ means there is a 100% chance (or that it is definitely the case) that the person is outside the search area at the start of the search. It is not realistic since if that were the case, the team would redefine the bounderies of the search area.

(c) $O'(E)$ means take the derivative of O treating E as a variable and I as a constant.

$$O'(E) = \frac{-I(-(1-I))}{(1-(1-I)E)^2} = \frac{I(1-I)}{(1-(1-I)E)^2} > 0$$

Since the derivative is positive, $O(E)$ is an increasing function. Thus, as search effort increases, the probability that the person is outside the search area also increases.