1.

a)

$$P(B|Test = Positive) = \frac{P(Test = Positive|B)P(B)}{P(Test = Positive)}$$

$$P(Test = Positive) = P(Test = Positive|B)P(B)+P(Test = Positive|-B)P(-B)$$

$$P(Test = Positive) = 0.95 * 0.01 + 0.10 * 0.99 = 0.1085$$

$$P(B|Test = Positive) = \frac{0.95 * 0.01}{0.1085} = 0.0875$$

Probabilitate mica din cauza P(B) = 0.01 (foarte mica)

b)

$$Let\ P(Test = Positive| - B)\ be\ s$$

$$\frac{P(Test = Positive|B)P(B)}{P(Test = Positive) = P(Test = Positive|B)P(B) + (1 - s)P(-B)} = 0.5$$

$$\frac{0.95 * 0.01}{0.95 * 0.01 + (1 - s) * 0.99} = 0.5$$

$$0.5[0.95 * 0.01 + (1 - s) * 0.99] = 0.95 * 0.01$$

$$s = 0.9904$$