Solution to exc 2.1 to 2.10

Ex 1a: 2/3; 1b: 2/3

Ex 2.2: Prob(guilty/match) = Prob(match/guilty)\*Prob(guilty)/Prob(match) = Prob(guilty)/Prob(match). Let’s say there are N people in a city, and m with a match, then posterior prob = 1/m.

2.3 Follows from linearity of Cov(.)

2.4 Prob(+/disease)\*Prob(disease)/Prob(+) = 0.0098

2.5 switch

2.6a ii; b i, ii, and iii

2.7 X = toss (H, T) of die 1; Y = toss (H, T) of die 2; Z = parity of number of H

2.8.

Direction 1: Suppose cond independence is true; then one can choose g = p(x/z); h = p(y/z).

Direction 2: Show that p(x/z) = g(x,z) up to normalization constant.

Ex 2.9: a: True b: False.

Ex 2.10. Use abs(dx/dy) = 1/y^2 and plug in.