

Homework Solutions

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Exercise 23

- (a) A case is “very mild” if there are fewer than 40 lesions. The number of lesions on those in the non-vaccinated population has distribution $N(300, 100)$. So the proportion with fewer than 40 lesions is given by

$$\text{normalcdf}(-E99, 40, 300, 100) = 0.00466.$$

Note that they gave you a value of the variable (40) and asked for a proportion (area). That is why you use the `normalcdf` function.

- (b) In this case, they give you a proportion (25%), which is an area, and ask for a value of the variable (number of lesions). So this problem calls for the `invNorm` function. Also, they say “25% have at least...” which means that many or more. So 25% is the upper area. Percentiles are always expressed in terms of the lower area, which in this case is 75%. So we should compute `invNorm(.75, 50, 10)` and get 56.7.