

4. In statistics, the range is computed as the difference between the minimum and maximum values

$$\text{range}(x) = \max(x) - \min(x)$$

If the operational time of Kal Culas graphics cards are each exponentially distributed with a mean time of 32 months, compute the expected range of i.i.d. random variables  $X_1, X_2, X_3, X_4$ ; where each random variable represents one graphics card. To show your work, set up all of the integrals correctly. You may then use software to perform the computations.