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$$P(W_4 \leq 2)$$

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$$P(W_4 \leq 2) = 1 - e^{-2}$$

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$$P(T_4 \leq 5)$$

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Question b) The distribution of the time to the arrival of the fourth call is a Gamma $(4, \lambda)$ distribution. We find the probability using the result (2) on page 286

$$P(T_4 \leq 5) = 1 - e^{-5}\left(1 + 5 + \frac{25}{2} + \frac{125}{6}\right)$$

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$$P(T_4 \leq 5) = 1 - e^{-5}\left(1 + 5 + \frac{25}{2} + \frac{125}{6}\right) = 1 - \frac{118}{3}e^{-5}$$

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Question c) Using (3) page 286

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Question c) Using (3) page 286

$$E(T_4)$$

Question a) See page 289. The time between two calls in a Poisson process is exponentially distributed (page 289). Using the notation of page 289 with $\lambda = 1$ we get

$$P(W_4 \leq 2) = 1 - e^{-2} = 0.8647$$

Question b) The distribution of the time to the arrival of the fourth call is a Gamma $(4, \lambda)$ distribution. We find the probability using the result (2) on page 286

$$P(T_4 \leq 5) = 1 - e^{-5}\left(1 + 5 + \frac{25}{2} + \frac{125}{6}\right) = 1 - \frac{118}{3}e^{-5} = 0.735$$

Question c) Using (3) page 286

$$E(T_4) = \frac{4}{\lambda}$$

Question a) See page 289. The time between two calls in a Poisson process is exponentially distributed (page 289). Using the notation of page 289 with $\lambda = 1$ we get

$$P(W_4 \leq 2) = 1 - e^{-2} = 0.8647$$

Question b) The distribution of the time to the arrival of the fourth call is a Gamma $(4, \lambda)$ distribution. We find the probability using the result (2) on page 286

$$P(T_4 \leq 5) = 1 - e^{-5}\left(1 + 5 + \frac{25}{2} + \frac{125}{6}\right) = 1 - \frac{118}{3}e^{-5} = 0.735$$

Question c) Using (3) page 286

$$E(T_4) = \frac{4}{\lambda} = 4$$