

$$\alpha_* = \alpha + x = 1 + 3 = 4, \quad \frac{1}{\theta_*} = \frac{1}{\theta} + n = \frac{1}{1.2} + 2 \rightarrow \theta_* = \frac{1}{\left(\frac{1}{1.2}\right) + 2} = \frac{1}{2.8333}$$

$$E(X) = \alpha_* \theta_* = \frac{4}{2.8333} = 1.4118$$

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ALTERNATE

$$\bar{x} = \frac{3}{2} = 1.5 \quad \mu = E(\lambda) = 1.2, \quad \sigma = \sqrt{E(\lambda)} = \alpha \theta^2 = 1.2^2$$

$$v = E(V(\lambda)) = 1.2$$

$$k = \frac{v}{\sigma} = \frac{1.2}{1.2^2} = \frac{5}{6} \quad Z = \frac{n}{n+k} = \frac{2}{2 + \frac{5}{6}} = \frac{12}{17}$$

$$E(X) = \left(\frac{12}{17}\right)(1.5) + \left(\frac{5}{17}\right)(1.2) = 1.4118$$

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