Problem 3.60

Find the variance and standard deviations for the r.v. X of a) problem 3.43, and b) problem 3.44

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a) Using the results of problem 3.43,

$$\sigma_x^2 = \langle X^2 \rangle - \langle X \rangle^2 = 6 - 1 = 5$$

$$\sigma_x = \sqrt{\sigma_x^2} = \sqrt{5}$$

b) Using the results of problem 3.44,

$$\sigma_x^2 = \langle X^2 \rangle - \langle X \rangle^2 = \frac{3}{5} - \left(\frac{3}{4}\right)^2 = \frac{3}{80}$$

$$\sigma_x = \sqrt{\frac{3}{80}} = \frac{\sqrt{240}}{80} = \frac{\sqrt{15 \cdot 16}}{80} = \frac{\sqrt{15}}{20}$$