EVEN ANSWERS TO HOMEWORK "TO FINISH BY MARCH 31"

Chapter 4.2:
6: $n - 2np$
8: $-\frac{8}{5}$
10: (a) 2 (b) 1

Chapter 4.3:
2: $\frac{67}{16}$
6: We have

$$\begin{aligned}
E((X-Y)^2) &= E(X^2 + Y^2 - 2XY) \\
&= E(X^2) + E(Y^2) - 2E(XY) \text{ (by theorem 4.2.1)} \\
&= E(X^2) + E(Y^2) - 2E(X)E(Y) \text{ (since } X \text{ and } Y \text{ are independent)} \\
&= E(X^2) + E(Y^2) - 2E(X)E(X) \text{ (since } E(X) = E(Y)) \\
&= E(X^2) + E(Y^2) - 2(E(X))^2 \\
&= E(X^2) + E(Y^2) - (E(X))^2 - (E(X))^2 \\
&= E(X^2) - (E(X))^2 + E(Y^2) - (E(X))^2 \\
&= E(X^2) - (E(X))^2 + E(Y^2) - (E(Y))^2 \text{ (since } E(X) = E(Y)) \\
&= Var(X) + Var(Y).
\end{aligned}$$