Name:

Quiz 14, Attempt 1

Suppose $X \sim \chi^2(38)$ and $Y \sim \chi^2(36)$ are independent.

Express $P(X/Y \le \pi)$ in terms of the cdf of a known distribution. Use, for example, the notation $F_{f(2,3)}(\cdot)$ or $F_{\chi2(17)}(\cdot)$ to represent the cdf of an f distribution with 2 numerator and 3 denominator degrees of freedom or the cdf of a χ^2 distribution with 17 degrees of freedom, respectively.

$$P\left(\frac{X}{Y} \le \pi\right) = P\left(\frac{X/38}{Y/36} \le \frac{36}{38}\pi\right)$$

$$= F_{f(38,36)}\left(\frac{36}{38}\pi\right)$$

Quiz 12, Attempt 2

If X and Y are i.i.d. N(5,2), what is cov(X+2Y, 2X-Y)?

$$= cov(X, 2x) - cov(X, Y) + 4 cov(X, Y) - 2 cov(Y, Y)$$

$$= 2 var(x) - 0 + 0 - 2 var(Y)$$

$$= 0.$$