STAT 312 Quiz 3

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Problem 1:

X and Y are normal random variables with E(X) = 2, V(X) = 5, E(Y) = 6, V(Y) = 8 and Cov(X,Y)=2.

a)

E(3X + 2Y) (2 points)

3 * E(X) + 2 * E(Y)
3 * 2 + 2 * 6
6 + 12

mean = 18

b)

V(3X + 2Y) (4 points)

3^2 * 5 + 2^2 * 8 + (2 * 3 * 2 * 2) 45 + 32 + 24

variance = 101

c)

Find P(3X + 2Y > 20) (4 points)

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1 - pnorm(20, 18, sqrt(101))
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## [1] 0.4211285
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1 - pnorm(20, 18, sqrt(101))

0.421