Practice worksheet | Continuous probability and normal distributions

Independent sums and sample means

Name: _____ Date: _____

6 questions | 13 marks

1. Independent $X \sim N(10, 4)$, $Y \sim N(5, 9)$. Find the distribution of $X + Y$. [2 marks]

2. A normal population has mean 80 and SD 12. Find the distribution of a mean from 9 independent observations. [2 marks]

3. For that sample mean, find $P(\text{mean} > 84)$. [2 marks]

4. If X has variance 4, compare $\mathrm{Var}(2X)$ with the variance of $X_1 + X_2$ for independent copies. [2 marks]

5. Two normally distributed processing times come from the same machine cycle and are strongly related. Can you automatically add their variances? [2 marks]

6. Independent normal X, Y have means 20,12 and variances 9,4. Find $P(X - Y < 5)$. [3 marks]