**DoNow practice for familiarity and speed** Name:

Work these problems rapidly on lined paper, developing a standard method (skip those you don't know how to start)

**Expected value given table (fair)**

1. Given the following probability distribution, with $E(x) = 2.5$

| $x$ | 0 | 1 | 2 | 4 |
|---|---|---|---|---|
| P(x) | p | 0.3 | 0.1 | q |

   (a) Find the value of $p$

   (b) Find the value of $q$

**Calculus operations with given values**

2. Given $f(2) = 2$, $g(2) = -2$, $f'(2) = -1$, and $g'(2) = 3$

   (a) Find the derivative of $f + g$

   (b) Find the derivative of $f \times g$

   (c) Find the derivative of $f \div g$

**Integration w calculator**

3. Given the bivariate data shown in the table below, perform a linear regression with $y = ax + b$.

| $x$ | 98 | 112 | 140 | 150 |
|---|---|---|---|---|
| $y$ | 54 | 59 | 78 | 81 |

   (a) Write down, $a$, $b$, $r$, and characterize $r$.

   (b) Using the fitted linear model find $y$ for $x = 142$.

4. Two events $A$ and $B$ are such that $P(A) = 0.2$ and $P(A \cup B) = 0.5$.

   (a) Given that $A$ and $B$ are mutually exclusive, find $P(B)$.

   (b) Given that $A$ and $B$ are independent, find $P(B)$.

**Binomial distribution**

5. operations with complements, i.e. $1 - B_{CDF}(10, 8, 0.25) = B_{CDF}(10, 1, 0.75)$