Warm-Up 12

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1 Formula Area

1. Mean of a **uniform distribution** from a to b: $\mu = (a + b)/2$

2. Standard deviation of a **uniform distribution** from a to b: $\sigma = \sqrt{(b-a)^2/12}$

3. The normalized pdf of a **uniform distribution** from a to b is $p(x) = 1/(b-a)$.

4. The IQR, or interquartile range, is $Q3 - Q1$.

2 Uniform Distribution, PDFs

1. Births are approximately uniformly distributed between the 52 weeks of the year. They can be said to follow a uniform distribution from one to 53 (spread of 52 weeks). Use this fact to answer below:

   - Graph the normalizeed pdf. What is $p(x)$, the normalized pdf?

   - What are the mean and standard deviation of this distribution?

   - What is the probability someone is born between weeks 2 and 12?

   - What is the probability that someone is born on exactly on Christmas morning, week 52.0?

   - Find the 70th percentile.

2. Suppose that the value of a stock varies each day from $16 to $25 with a uniform distribution.

   - Find the upper quartile - 25% of all days the stock is above what value? Draw the graph.

   - Find the lower quartile, and the IQR.