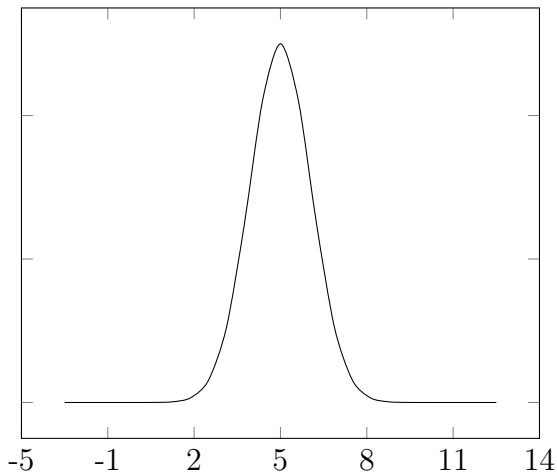


1. True. This is straight from a T/F in the homework.
2. False. The CDF exists, even if we can't write an antiderivative in terms of elementary functions.
3. Let Y be the standard normal distribution. Here is a rough sketch of the graph.



- (a) $P(5 \leq X \leq 8) = P(0 \leq Y \leq 1) = z$ -score for $z = 1$. The graph should be shaded from 5 to 8.
 - (b) $P(2 \leq X \leq 8) = P(-1 \leq Y \leq 1) = 2 * z$ -score for $z = 1$, since the normal distribution is symmetric. The graph should be shaded from 2 to 8.
 - (c) $P(8 \leq X) = P(1 \leq Y) = \frac{1}{2} - z$ -score for $z = 1$. The graph should be shaded from 8 onward.
4. Use Chebyshev's inequality. We want: $P(\mu - k\sigma \leq X \leq \mu + k\sigma) \geq 1 - \frac{1}{k^2} = 0.75$. Solve for k in $1 - \frac{1}{k^2} = 0.75 \rightarrow 0.25 = \frac{1}{k^2} \rightarrow k = 2$.