MATH 105 Quiz # 6 Monday Mar 21, 2016 **FAMILY NAME:**
(4 questions, two sides, 15 minutes) **STUDENT NUMBER:**

Work must be shown for full marks.

1. A continuous random variable X has probability density function $p(x) = \frac{1}{9}$, $0 \leq x \leq 9$. Find b so that
$$\text{Prob}(0 \leq X \leq b) = \frac{1}{3}.$$

2. Let $f(x) = k\sqrt{x}$, where k is a constant. Find the value of k so that $f(x)$ is a probability density function on $0 \leq x \leq 4$.

3. Compute the cumulative distribution function corresponding to the probability density function $f(x) = 2(x-1)$, for $1 \leq x \leq 2$.

4. Let X be the continuous random variable corresponding to the failure time (from purchase time) of a certain brand of cell phone. Let the probability density function of X be

$$p(x) = e^{-x}, \quad \text{for } x \geq 0$$

Determine the average failure time for that brand of cell phones.

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1. A continuous random variable X has probability density function $p(x) = \frac{1}{6}$, $0 \leq x \leq 6$. Find b so that
$$\text{Prob}(0 \leq X \leq b) = \frac{1}{3}.$$

2. Let $f(x) = k\sqrt{x}$, where k is a constant. Find the value of k so that $f(x)$ is a probability density function on $0 \leq x \leq 9$.

3. Compute the cumulative distribution function corresponding to the probability density function $f(x) = \frac{1}{2}(x-1)$, for $1 \leq x \leq 3$.

4. Let X be the continuous random variable corresponding to the failure time (from purchase time) of a certain brand of cell phone. Let the probability density function of X be

$$p(x) = e^{-x}, \quad \text{for } x \geq 0$$

Determine the average failure time for that brand of cell phones.