Stat 254: Test 2 Formula Sheet

$$\mu = \int_{-\infty}^{\infty} x\ f(x)dx$$

$$\sigma^2 = \int_{-\infty}^{\infty} x^2\ f(x)dx - \mu^2$$

$$f(x) = \begin{cases} ke^{-kx} & \text{for } x \geq 0 \\ 0 & \text{elsewhere} \end{cases} \qquad \text{where } \mu = \frac{1}{k}$$

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{\overline{x} - \mu}{\sigma/\sqrt{n}}$$

$1 - \alpha$	0.9	0.95	0.98	0.99
$z_{\alpha/2}$	1.645	1.960	2.326	2.576

$$\mu = \overline{x} \pm z_{\alpha/2}\sqrt{\frac{\sigma^2}{n}}$$

$$\mu = \overline{x} \pm t_{\alpha/2}\sqrt{\frac{s^2}{n}}$$

$$p = \hat{p} \pm z_{\alpha/2}\sqrt{\frac{\hat{p}\hat{q}}{n}}$$

$$\frac{(n-1)s^2}{\chi^2_{\alpha/2}} \leq \sigma^2 \leq \frac{(n-1)s^2}{\chi^2_{(1-\alpha/2)}}$$