Stat 254 -- Formula sheet for Test #2

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

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

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

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

$$SE = \sqrt{\frac{\sigma^2}{n}} \qquad SE = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

$$SE = \sqrt{\frac{\hat{p}\hat{q}}{n}} \qquad SE = \sqrt{\frac{\hat{p}_1\hat{q}_1}{n_1} + \frac{\hat{p}_2\hat{q}_2}{n_2}}$$

1-α	$z_{\alpha/2}$	z_{α}
0.90	1.645	1.282
0.95	1.960	1.645
0.98	2.326	2.054
0.99	2.576	2.326

$p < 0.01$	highly significant
$0.01 < p < 0.05$	significant
$0.05 < p < 0.1$	tending towards significance
$p > 0.1$	not significant

$$z = \frac{\bar{x} - \mu_0}{\sqrt{\frac{\sigma^2}{n}}} \qquad z = \frac{\bar{x}_1 - \bar{x}_2 - D_o}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} \qquad z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}\hat{q}\left(1/n_1 + 1/n_2\right)}}, \quad \hat{p} = \frac{x_1 + x_2}{n_1 + n_2}$$