Normal distribution

copy to paper!!!

$$P(|Z| \geq k) = 2P(Z \geq k)$$
$$= 2(1 - P(Z \leq k))$$
$$= 2 - 2P(Z \leq k)$$

$$P(|Z| \leq k) = 1 - 2P(Z \geq k)$$
$$= 1 - 2(1 - P(Z \leq k))$$
$$= 2P(Z \leq k) - 1$$

Gaussian form

If sample sd σ is given:

$$\frac{\bar{\theta} - \theta}{\sigma/\sqrt{n}}$$

If only working with θ: $\dfrac{\hat{\theta} - \theta}{\sqrt{\dfrac{\theta(1-\theta)}{n}}}$ (asymptotic PQ)

Confidence Intervals

If σ given:

$$\pm z\frac{\sigma}{\sqrt{n}}$$

If not:

$$\pm z\sqrt{\frac{\theta(1-\theta)}{n}}$$

$z = F^{-1}(p)$ (on lower quantiles chart)
$F^{-1}(0.95) = 1.96$

$$\text{Var}(X) = E(X^2) - E(X)^2$$

$$\text{Var}(aX + b) = a^2\text{Var}(X)$$