

MATH 1070-070: Final Exam

June 17, 2008

Name: _____

No outside materials are allowed except pens, pencils, erasers, and calculators. You have one half hour to complete this quiz. Please keep nervous ticks to a minimal so as to not disrupt anyone else taking the quiz. Anyone caught cheating will be punished with a grade of 0%.

You may need the following:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n X_i, \quad S_X = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$

$$IQR = Q_3 - Q_1, \quad Q_1 - 1.5(IQR), \quad Q_3 + 1.5(IQR)$$

$$68\% \text{ in } \bar{x} \pm S_x, \quad 95\% \text{ in } \bar{x} \pm 2S_x, \quad \text{All in } \bar{x} \pm 3S_x$$

$$r = \frac{1}{n-1} \sum Z_x Z_y = \frac{1}{n-1} \sum \left(\frac{x - \bar{x}}{S_x} \right) \left(\frac{y - \bar{y}}{S_y} \right)$$

$$\hat{y} = a + bx, \quad b = r \left(\frac{S_y}{S_x} \right), \quad a = \bar{y} - b\bar{x}$$

$$\mu = \sum_{i=1}^n x_i P(x_i)$$

$$P(A^c) = 1 - P(A), \quad P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B),$$

For X , a normal random variable:

$$z = \frac{x - \mu}{\sigma}, \quad \text{estimate of } \mu = \bar{x}, \quad \mu_{\bar{x}} = \mu, \quad s.e._{\bar{x}} = \sigma/\sqrt{n}, \quad \bar{x} \pm t(s.e.), \quad d.f. = n - 1, \quad z_{\bar{x}} = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

For X , a binomial random variable:

$$P(x) = \frac{n!}{x!(n-x)!} p^x (1-p)^{n-x}, \quad \mu_x = np, \quad \sigma_x = \sqrt{np(1-p)}, \quad \mu_p = p, \quad s.e._p = \sqrt{\frac{p(1-p)}{n}},$$

$$\text{estimate of } p = \hat{p}, \quad se_{\hat{p}} = \sqrt{\hat{p}(1-\hat{p})/n}, \quad \hat{p} \pm z(se), \quad z = \frac{\hat{p} - p_0}{s.e.}, \quad \text{where } s.e. = \sqrt{\frac{p_0(1-p_0)}{n}}$$