5.3.6a: 2.33: .9901
-1.64: .0505, F: .9396. interval

b. $P(Z \leq 2.58) = 99.51\%$ conf. interval

c. $P(-1.64 \leq Z \leq 0) = .50 - .0505 = .4495$

5.3.12: $n = 100$
$p = .54$

$= .54 \pm z_{\alpha/2}\sqrt{\frac{p(1-p)}{n}}$

$= .54 \pm 1.96\sqrt{\frac{.54(.46)}{100}}$

$= .54 \pm .0977 = .4421$ to $.6379$ prefer Bud

Schlitz: inconclusive b/c margin of error includes .50
Bud: higher percentage prefer Bud

$.46 \pm 1.96\sqrt{\frac{.54(.46)}{100}} = .3623$ to $.5577$

5.3.26. 99% conf interval; $z = 2.58$

$n = z^2_{\alpha/2}/d^2 \cdot (p)(1-p) = \frac{2.58^2}{.05^2}(.4)(.6) = 639.01 = 640$

5.4.8 $y_3' = n!/(i-1)!(n-i)![F_Y(y)]^{i-1}[1-F_Y(y)]^{n-i} f_Y(y)$
$f_y = 1/\theta$ $F_Y = y/\theta$, $i = 1$, $n = 4$

$= 12\left[\frac{y}{\theta}\right]^2\left[1-\frac{y}{\theta}\right]\left(\frac{1}{\theta}\right)$
$= 12\left(y^2/\theta^2\right)(1-y/\theta) = 12\left(y^2/\theta^3 - y^3/\theta^4\right)$

$E(y) = 12\int_0^\theta y^2/\theta^3 - y^3/\theta^4 \, y \, dy$

$= 12\int_0^\theta y^3/\theta^3 - y^4/\theta^4 \, dy$

$= 12\left(y^4/4\theta^3 - y^5/5\theta^4 \Big|_0^\theta\right)$

$= 12\left(\theta^4/4\theta^3 - \theta^5/5\theta^4\right) = \frac{12\theta}{20} = \frac{3}{5}\theta$