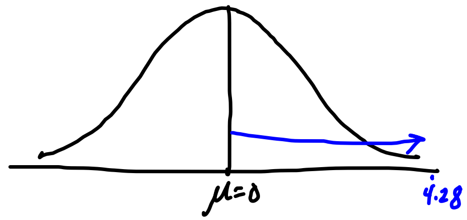
6.19 pg 263 Find the area under the standard normal curve:

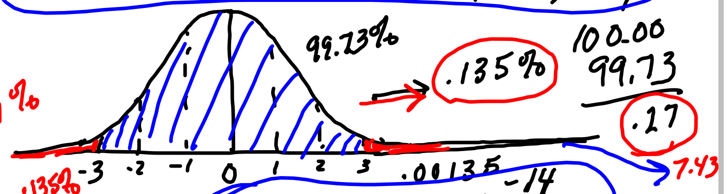
a) between $z=0$ and $z = 4.28$



$P(0 < z < 4.28) =$

normalcdf$(0, 4.28) \approx .5000$

c) $P(z > 7.43) =$ normalcdf$(7.43, E99)$



$100.00 - 99.73 = .27$

adds to .27% area .0027

$\approx 5.473 \times 10^{-14}$

≈ 0

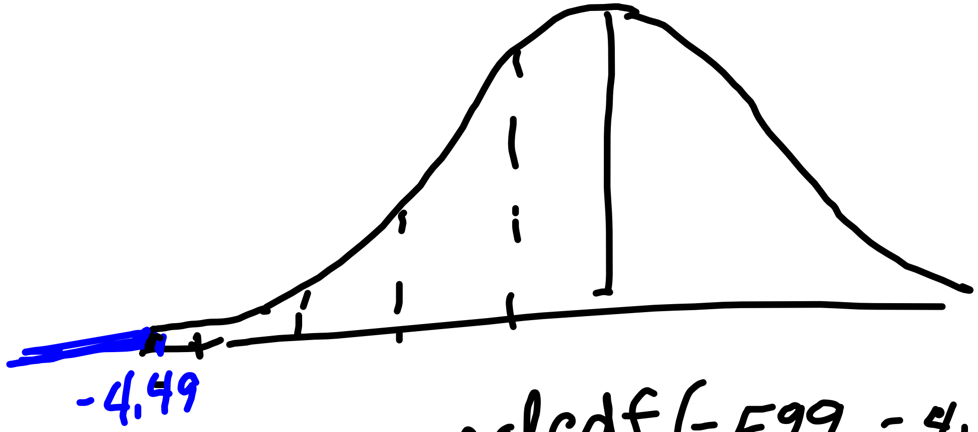
$.00000000000005473$

b) $P(-3.75 < z < 0)$

normalcdf$(-3.75, 0) \approx .5000$

z represents — the # of standard deviations from zero.

6.19 d) $\underline{P(z < -4.49)}$



$= \text{normalcdf}(-E99, -4.49)$

$\approx 3.5643 \times 10^{-6}$

$\approx .00000356$

6.31 $\mu = 55$ and $\sigma = 7$

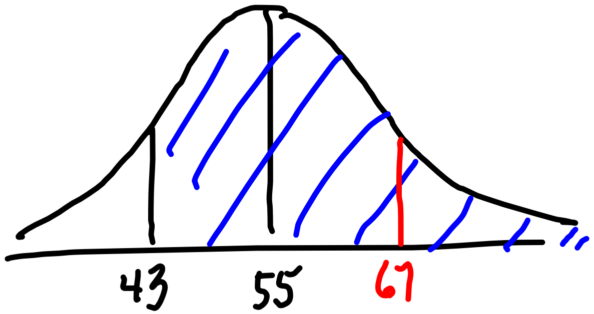
pg 270

a) $P(x > 58) = \text{normalcdf}(58, E99, 55, 7)$

$\approx .3341$

b) $P(x > 43) = \text{normalcdf}(43, E99, 55, 7)$

$\approx .9568$



$$\begin{array}{r} 55 \\ -21 \\ \hline 34 \end{array} \quad (3 \times 7)$$

c) $P(x < 67) = \underline{\text{normalcdf}(-E99, 67, 55, 7)}$

$\approx .9568$

d) $P(x < 24) = \text{normalcdf}(-E99, 24, 55, 7)$

$\approx 4.747 \times 10^{-6}$

$\approx .000004747$

≈ 0

6.50

275

pg

max wait 20 min

50% discount over 20 min

$\mu = 15$ min

$\sigma = 2.4$ min

a) $P(x \geq 20) =$ normalcdf(20, E99, 15, 2.4)

$\approx .0186$

b) $P(x > 25) =$ normalcdf(25, E99, 15, 2.4)

$\approx 1.5464 \times 10^{-5}$

$\approx .0000155$

$.00155\%$

6.57

pg 279

$\mu = 200$

$\sigma = 25$

a) area to left = .6330

probability

$x = \text{invNorm}(.6330, 200, 25)$

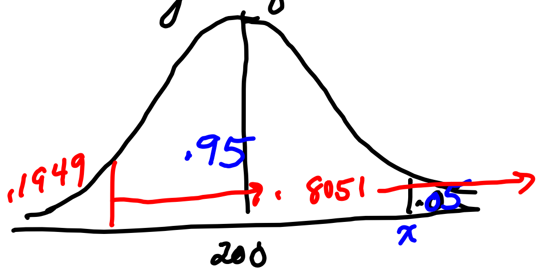
≈ 208.50

$P(x < 208.50) = \text{normalcdf}(-E99, 208.5, 200, 25)$

$= .6330$

Check

6.57 b) to the right of x is .05



$x = \text{invNorm}(.95, 200, 25)$

≈ 241.12

c) to the right is .8051

$x = \text{invNorm}(.1949, 200, 25)$

≈ 178.50

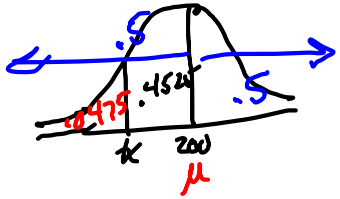
d) to the left of x is .0150

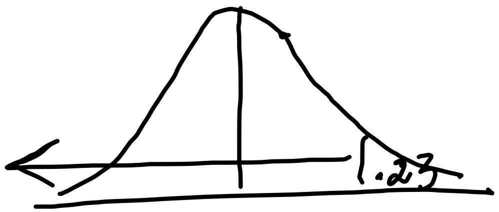
$x = \text{invNorm}(.0150, 200, 25)$

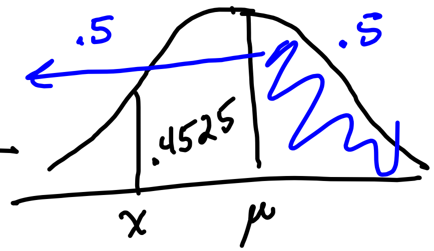
≈ 145.75

e) $x = \text{invNorm}(.0475, 200, 25)$

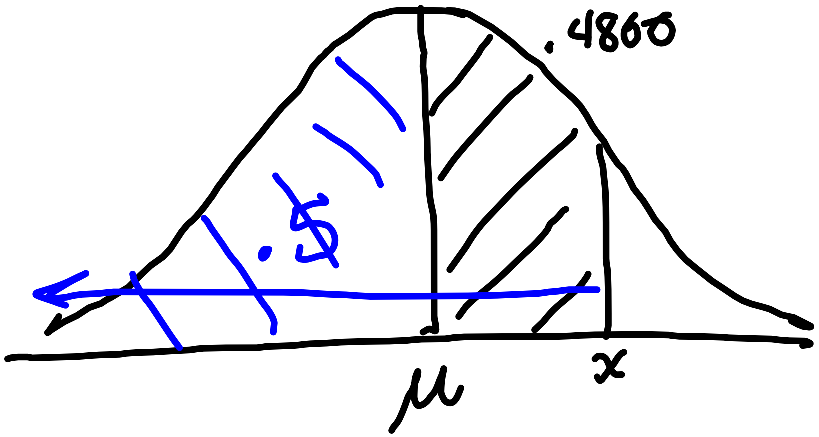
≈ 158.26







f)



$$\begin{array}{r} .4800 \\ +.5000 \\ \hline .9800 \end{array}$$

$x = \text{invNorm}(.98, 200, 25)$

≈ 251.34

7.19

pg 305

$\mu = 3$ hours / day

$\sigma = .80$

$n = 75$

$\mu_{\bar{x}} = 3$

$$\sigma_{\bar{x}} = \frac{.80}{\sqrt{75}}$$

$\approx .0924$

7.21

$\mu = 320$ $n = 25$

$\sigma = 72$

$\mu_{\bar{x}} = 320$

$$\sigma_{\bar{x}} = \frac{72}{\sqrt{25}}$$

≈ 14.40

7.57

pg 317

skewed right

$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

$\mu = 68$ in

$n = 100$

$\sigma = 4$ in

$\mu_{\bar{x}} = 68$

a)

$\sigma_{\bar{x}} = \frac{4}{10} = .4$

$P(x < 67.8) = \text{normalcdf}(-E99, 67.8, 68, .4)$
$\approx .3085$

b) $P(67.5 < x < 68.7)$
$= \text{normalcdf}(67.5, 68.7, 68, .4)$
$\approx .8543$

c) $68 - .6 = 67.4$
$68 + .6 = 68.6$

$P(67.4 < x < 68.6)$
$= \text{normalcdf}(67.4, 68.6, 68, .4)$
$\approx .8664$

pg 323 7.68 consistent - the sd. decreases as n increases

unbiased

$$\mu_{\bar{x}} = \mu$$

$$\mu_{\hat{p}} = p$$

7.66

$N = 2800$

$p = .29$

$n = 80$

$\hat{p} = .33$

sampling error

$\hat{p} - p$

$.33 - .29 = .04$

$pn = 80(.29)$
$qn = 80(.71)$ > 5

$\frac{80}{2800} < .05$

$.029 < .05$ ✓

7.85

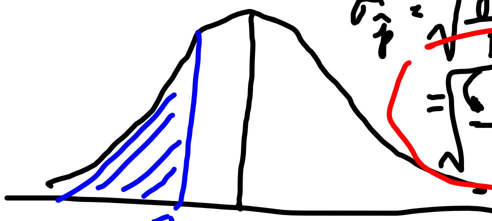
pg 327

$N = 30000$ $\quad n = 100$ $\quad \mu_{\hat{p}} = .59$

$p = .59$

$\sigma_{\hat{p}} = \sqrt{\frac{pq}{n}} = \sqrt{\frac{(.59)(.41)}{100}} \approx .0491833$

a) $\hat{p} = .56$



$P(\hat{p} < .56) = \text{normalcdf}(-E99, .56, .59, .0491833)$

$\approx .2709$

$z = \text{invNorm}(.2709)$

$\approx -.6101$

Check $\hat{p} = \text{invNorm}(.2709, .59, .0491833)$

$\approx .56$