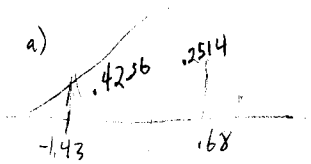
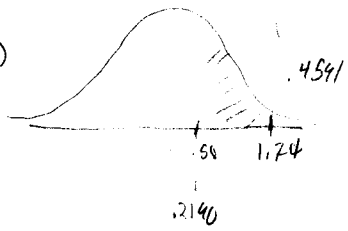
key 6/25 assignment

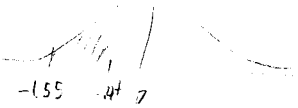
2 a) area between 0 and .9 = .3159 b) .3195 - same area as a

5 a) 

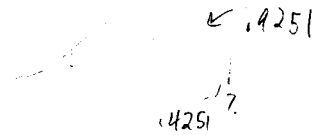
.4236 + .2514 = .6753

b) 

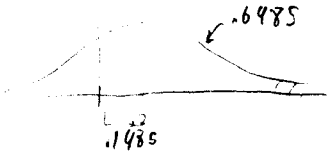
.4591 - .2140 = .2401

c) 

.4394 - .1700 = .2694

7 

so take off .5 so we can read from chart .9251 - .5 = .4251
look at table for .4251 and the z value is 1.44

9 

z = -.52

15 $x \sim N(1.2, .16^2)$

a) $P(1 < x < 1.1) = P\left(\frac{1-1.2}{.15} < z < \frac{1.1-1.2}{.15}\right) = P(-1.33 < z < -.666)$
$= .4082 - .2486 = .1596$

b) $P(x > 1.38) = P\left(z > \frac{1.38-1.2}{.15}\right) = P(z > 1.2)$
$= .5 - P(z < 1.2) = .5 - .3849 = .1151$

c) $P(1.35 < x < 1.5) = P\left(\frac{1.35-1.2}{.15} < z < \frac{1.5-1.2}{.15}\right) = P(1 < z < 2)$
$= P(z < 2) - P(z < 1) = .4772 - .3413$
$= .1359$

19 a) $x \sim N(.0775, .016^2)$

$P(x > .09) = P\left(z > \frac{.09-.0775}{.016}\right) = .5 - P(z < .78)$
$= .5 - .2823 = .2177$

b) $P(x < .06) = P\left(z < \frac{.06-.0775}{.016}\right) = P(z < -1.09) = .5 - P(z < 1.09)$
$= .5 - .3621 = .1379$

21 $x \sim N(27, 14^2)$

$P(x > 50) = P(z > \frac{50-27}{14}) = .5 - P(z < 1.64) = .0505$ (.4495)

24 $x \sim N(2800, 500^2)$

a) $P(x > 3500) = .5 - P(z < \frac{3500-2800}{500}) = .5 - P(z < 1.4) = .0808$ (.4192)

b) $P(x_L < x < x_U) = .95$

$P(\frac{x_L - 2800}{500} < z < \frac{x_U - 2800}{500}) = .95$ because of symetry we can split this and look at just one side

$P(z < \frac{x_U - 2800}{500}) = .475$ the z-value corresponding to .475 is 1.96

find boundary point

$1.96 = \frac{x_U - 2800}{500} \Rightarrow x_U = 3780$

$-1.96 = \frac{x_L - 2800}{500} \Rightarrow x_L = 1820$

limits within which 95% of workers recieve bonuses

50 $P(z > z_0) = .3594$ (.1406)

$P(z < z_0) = .1406$ $z_0 = .36$

54 $P(z < z_0) = .0968$ (.0968, .0322)

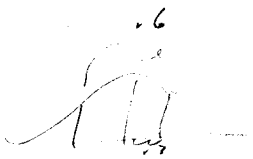
$P(z > -z_0) = .0322$ $z_0 = -1.30$

62 $x \sim N(75, 12^2)$ a) $P(x < 60) = P(z < \frac{60-75}{12}) = P(z < -1.25)$

$= .5 - P(z < 1.25) = .1056$

b) $P(x > 60) = 1 - P(x < 60) = 1 - .1056 = .8944$

c) $P(x > 90) = P(z > \frac{90-75}{12}) = .5 - P(z < 1.25) = .1056$ (.3944)



74 $x \sim N(870, ?)$

a) $P(670 < x < 1170) = .6 \Rightarrow P\left(\frac{570-870}{s} < z < \frac{1170-870}{s}\right) = .6$

use symetry look at one side $P\left(z < \frac{300}{s}\right) = .3$

$.84 < \frac{300}{s} \Rightarrow s = 357.14$

b) $P(x > 1000)$

$P\left(z > \frac{1000-870}{357.14}\right) = .5 - P(z < .36) = .3594$ (.1406)

c) $P(x < 500) = P\left(z < \frac{500-870}{357.14}\right) = .5 - P(z < 1.04) = .1492$

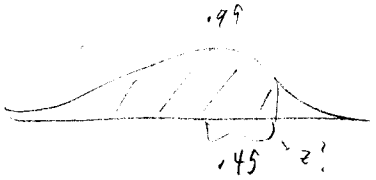
87 $x \sim N(w+20000, 10{,}000)$

x = # of word in manuscript

w = # of words specified in contract

interested in x that

$.95 = P(x < 100{,}000) = P\left(z < \frac{100{,}000 - (w+20{,}000)}{10{,}000}\right) = .95$



$= P\left(z < \frac{80000 - w}{10{,}000}\right) = .45 \rightarrow$ corresponding z is 1.645

$1.645 = \frac{80000 - w}{10{,}000}$ $w = 63{,}550$ words