Problem Set $\# 9$
(1)

$$
\begin{aligned}
& \mu=100 \\
& \sigma=20
\end{aligned}
$$

a) $P(x<130)$


$$
x \sim N(100,400)
$$

$$
z=\frac{130-100}{20}=1.5
$$

$$
P(z<1.5) \approx .933(35 A)
$$

b)

$$
\begin{aligned}
& P(x>90) \\
& Z=\frac{90-100}{20}=-.5 \\
& P(z<-, 5) \approx 90100
\end{aligned}
$$

$$
\begin{aligned}
& \text { c) } P(80<x<125) \\
& Z=\frac{80-100}{20}=-1 \\
& Z=\frac{125-100}{20}=1.2 \\
& P(-1<z<1.2) \approx .726(35 \mathrm{f})
\end{aligned}
$$

$$
\begin{gathered}
\text { (2) } \mu=4 \\
\sigma=0.25 \\
x \sim N(4, .0625)
\end{gathered}
$$



$$
P(3,5<x<4,5)
$$

$$
z=\frac{3 \cdot 5-4}{.25}=-2
$$

$$
z=\frac{4 \cdot 5-4}{125}=2
$$

$$
P(-2<z<2) \approx .954
$$

155 cont ".

$$
\begin{aligned}
& \text { (3) } \mu=14 \\
& \sigma=4 \\
& x \sim N(14,16)
\end{aligned}
$$

a)

$$
\begin{aligned}
& P(x>20) \\
& Z=\frac{20-14}{4}=1.5 \\
& P(Z>1.5) \approx .0668(35 \mathrm{f})
\end{aligned}
$$


b)

$$
\begin{aligned}
& P(x<10) \\
& Z=\frac{10-14}{4}=-1 \\
& P(Z<-1) \approx 159(35 f)
\end{aligned}
$$



$$
\begin{array}{ll}
\text { (4) } \mu=551.3 & P(x>550) \\
\sigma=15 & Z=\frac{550-551.3}{15}=-.1 \\
x \sim N(551.3,225) & P(z>-.1) \approx .540(35 t)
\end{array}
$$

(5)

$$
\begin{aligned}
& \mu=500 \\
& \sigma=20 \\
& x \sim N(500,400)
\end{aligned}
$$

a)

$$
\begin{aligned}
& P(x<475) \\
& Z=\frac{475-500}{20}=-1.25 \\
& P(z<-1.25) \approx 1.106(35 f)
\end{aligned}
$$

b)

* use ansuer to parta and the prob. binomial formula

$$
\begin{aligned}
\begin{aligned}
p=.106 \\
n=3 \\
r=3
\end{aligned} & \binom{n}{r}(p)^{r}(1-p)^{n-r} \\
& =\binom{3}{3}(.106)^{3}(.894)^{0} \\
& =.00119(35 f)
\end{aligned}
$$

