

40

a) $\Phi(c) = 0,9832$
 $\Rightarrow c \approx 2,125$

Bruck
 tab.
 A3
 side 786
 $0,5 + 0,291 = 0,791$

b) $P(0 \leq Z \leq c) = 0,291$

Finne fra tabellen at $c \approx 0,9$

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c) $P(Z < 2) = 0,121$
 $\Rightarrow P(Z < c) = 1 - 0,121$
 $= 0,879$

$\Rightarrow c \approx 1,17$

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42 a)

Vil finne $Z_{0,0055}$
 Vi har at
 $1 - 0,0055 = 0,9945$
 fra tabell A3
 $\Rightarrow Z_{0,0055} = 2,54$

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44

$X \sim N(\mu, \sigma^2)$
 La $\mu = 200$ og $\sigma = 35$

a) $P(X < 250)$ vst at
 $\frac{X - \mu}{\sigma} \sim N(0,1)$

$= P\left(\frac{X - \mu}{\sigma} < \frac{250 - \mu}{\sigma}\right)$

$= P\left(\frac{X - 200}{35} < \frac{250 - 200}{35}\right)$

$= \Phi\left(\frac{250 - 200}{35}\right) = \Phi(1,429)$

$\approx 0,923$

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$$\begin{aligned}
 b) P(300 < X < 400) \\
 &= P\left(\frac{300-200}{35} < \frac{X-200}{35} < \frac{400-200}{35}\right) \\
 &= \Phi\left(\frac{400-200}{35}\right) - \Phi\left(\frac{300-200}{35}\right) \\
 &= \Phi(5,71) - \Phi(2,857) \\
 &\approx 1 - 0,9979 \\
 &= \underline{\underline{0,0021}}
 \end{aligned}$$

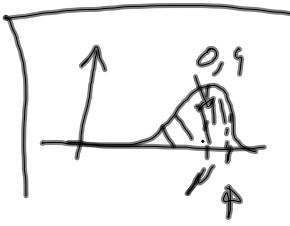
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$$\begin{aligned}
 c) P(\mu - 1,5\sigma < X < \mu + 1,5\sigma) \\
 &= P(-1,5\sigma < X - \mu < 1,5\sigma) \\
 &= P\left(-1,5 < \frac{X - \mu}{\sigma} < 1,5\right) \\
 &= \Phi(1,5) - \Phi(-1,5) \\
 &= 0,9332 - 0,0668 \\
 &= \underline{\underline{0,8664}}
 \end{aligned}$$

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48) $X \sim N(\mu, \sigma^2)$
 L \hat{c} $\mu = 98,25$ $\sigma = 0,75$.

Vil ha at
 0,9 kvantilen er



$$\begin{aligned}
 &\mu + 0,75 \cdot Z_{0,9} \\
 &= 98,25 + 0,75 \cdot 1,28 = 99,21
 \end{aligned}$$

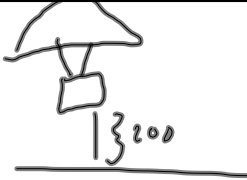
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b) Vil finne 0,1 kvantilen
 0,1 kvantilen er

$$\begin{aligned}
 &\mu + \sigma \cdot Z_{0,90} = 98,25 + 0,75 \cdot (-1,28) \\
 &= \underline{\underline{97,29}}
 \end{aligned}$$

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501



$$X \sim N(200, 30^2)$$

$$P(X \leq 100) = P\left(\frac{X-200}{30} < \frac{100-200}{30}\right)$$

$$= \Phi\left(\frac{100-200}{30}\right) = \Phi(-3,33)$$

$$= \underline{\underline{0,0004}}$$

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52) La $X \sim N(\mu, \sigma)$
 vi ket σ

I: $\mu + \sigma \cdot 1,28 = 10,256$
 II: $\mu + \sigma \cdot (-1,645) = 9,671$

I-II gir:

$$\mu + \sigma \cdot 1,28 - \mu - \sigma \cdot (-1,645)$$

$$= 10,256 - 9,671$$

$$\Rightarrow \sigma = \underline{\underline{0,2}}$$

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sette $\sigma = 0,2$ inn i I
 for μ

$$\mu + 0,2 \cdot 1,28 = 10,256$$

$$\Rightarrow \underline{\underline{\mu = 10}}$$

Så $X \sim N(10, 0,2^2)$

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