$\lambda = 2.0$

Oppgave 1)

$E(X) = \frac{1}{\lambda} = \frac{1}{2}$

$Var(T) = \frac{1}{\lambda^2} = \frac{1}{2^2} = \frac{1}{4}$

Oppgave 2)

$P(X \leq 0{,}5) = F(0{,}5) = 1 - e^{-\lambda \cdot t} = 1 - e^{-2 \cdot 0{,}5} = 1 - e^{-1} = 1 - \frac{1}{e} = 0{,}6321$

$P(X \geq 1{,}5) = e^{-\lambda \cdot t} = e^{-2 \cdot 1{,}5} = e^{-3} = \frac{1}{e^3} = 0{,}0498$

Oppgave 3)

$P(X \leq 2.0) = 1 - e^{-\lambda t} = 1 - e^{-2 \cdot 2} = 1 - e^{-4} = 1 - \frac{1}{e^4} = 0{,}9817$

$P(X \geq 1{,}5) = 0{,}0498$

$P(x \leq 1{,}5) = 1 - e^{-\lambda t} = 1 - e^{-2 \cdot 1{,}5} = 1 - e^{-3} = 0{,}9502$

Bruker formel $P(A|B) = \frac{P(A \cap B)}{P(B)}$

$P(x \leq 2.0 \mid X \geq 1{,}5) = \frac{P(1{,}5 \leq X \geq 2{,}0)}{P(x \geq 1{,}5)} = \frac{P(x \leq 2.0) - P(x \leq 1{,}5)}{P(x \geq 1{,}5)} = \frac{0{,}9817 - 0{,}9502}{0{,}0498} = 0{,}6325$

Oppgave 4)

Y: $\mu = 15$, $\sigma = 3$

Z: $\mu = 0$, $\sigma = 1$

$P(Z \leq 1{,}12) = F(1{,}12) = G\left(\frac{1{,}12 - 0}{1}\right) = G(1{,}12) = 0{,}8686$

$P(Z \geq -1{,}12) = 1 - G\left(\frac{-1{,}12 - 0}{1}\right) = 1 - G(-1{,}12) = 1 - 0{,}1314 = 0{,}8686$

$P(Y \leq 12) = F(12) = G\left(\frac{12 - 15}{3}\right) = G(-1) = 0{,}1587$