

i Øving 5 Sannsynlighet

oppg 1)

I) kontinuerlig stokastisk variabel:

kan ikke være graf 1, fordi den inneholder negativ sannsynlighet

kan ikke være graf 2, fordi sannsynligheten går over 1

kan ikke være graf 4, fordi summen er mindre enn 1

II) kontinuerlig stokastisk variabel:

graf 5: $f(0,5) = -0,1$ ish

kan ikke være Negativ sannsynlighet.

graf 8: ikke kontinuerlig

III)

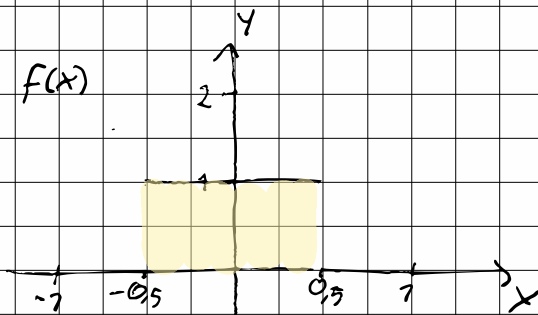
graf 3 & 6

Øv 5
oppg 2)

Sam 5

$$f(x) = \begin{cases} 1 & \text{for } -0,5 < x < 0,5 \\ 0 & \text{ellers} \end{cases}$$

a)



$$E(x) = \frac{a + \beta}{2} = \frac{0,5 - 0,5}{2} = \frac{0}{2} = \underline{\underline{0}}$$

$$\text{var}(x) = \frac{1}{12} (\beta - a)^2 = \underline{\underline{\frac{1}{12}}}$$

b)

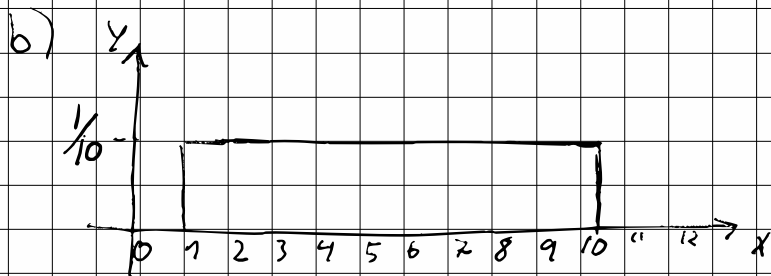
$$P(X < 0,25) = \int_{-0,5}^{0,25} f(x) dx = \left[x \right]_{-0,5}^{0,25}$$

$$(0,25) - (-0,5) = \underline{\underline{0,75}}$$

Øv 5
oppg 3)

Sann

a) $T \in \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$



$$f(x) = \begin{cases} 1/10 & \text{for } 1 \leq x \leq 10 \\ 0 & \text{ellers} \end{cases}$$

$$F(x) = \int_1^{10} 1/10 \, dx = \left[\frac{x}{10} \right]_1^{10} = \left(\frac{10}{10} \right) - \left(\frac{1}{10} \right) = \underline{\underline{9/10}}$$

$$d) f(x > 7) = \int_7^{10} 1/10 \, dx = \left(\frac{10}{10} \right) - \left(\frac{7}{10} \right) = \underline{\underline{3/10}}$$

$$e) E(X) = \frac{\alpha - \beta}{2} = \frac{10 - 1}{2} = \underline{\underline{4,5}}$$

$$\text{Var}(X) = \frac{1}{12} (\beta - \alpha)^2 = \frac{1}{12} (10 - 1)^2 = \frac{81}{12} = \underline{\underline{6,75}}$$

Öving 5)
oppgave 4) $E(x) = 2500$ $\lambda = \frac{1}{2500}$

a) $f(x) = \lambda e^{-\lambda x} = \frac{e^{-\frac{x}{2500}}}{2500}$



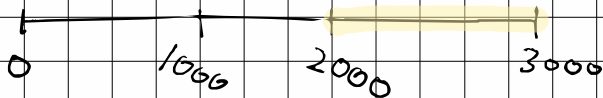
b) $p(x \leq 200) = F(200)$

$$F(200) = e^{-\frac{200}{2500}} = e^{-\frac{200}{2500}} = 0,923 = \underline{\underline{92,3\%}}$$

c) $p(p(x > 2000) | p(x > 1000)) =$

$$F(2000) = e^{-\frac{2000}{2500}} = 0,449$$

$$F(1000) = e^{-\frac{1000}{2500}} = 0,670$$



$$p(F(2000) | p(1000)) = 1 - F(2000)$$

$$1 - 0,449 = \underline{\underline{0,551}}$$

