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| | Navn: | | Skole: | |
| | Klasse: 20 | | Dato: 23. oktober 2022 | Fag: Matematik A |

Opgave 004

$$K'(t) = 0.4 + 2 \cos(0.25t)$$

Opgave A)

$$K'(5)$$

$$0.4 + 2 \cos(0.25 \cdot 5) \approx 1,030645$$

Opgave B)

$$K(t) = \int 0.4 + 2 \cdot \cos(0.25t)$$

$$K(t) = 0.4t + 8 \cdot \sin(0.25t) + c$$

$$K(0) = 75$$

$$0.4 \cdot (0) + 8 \cdot \sin(0.25 \cdot 0) + c = 75$$

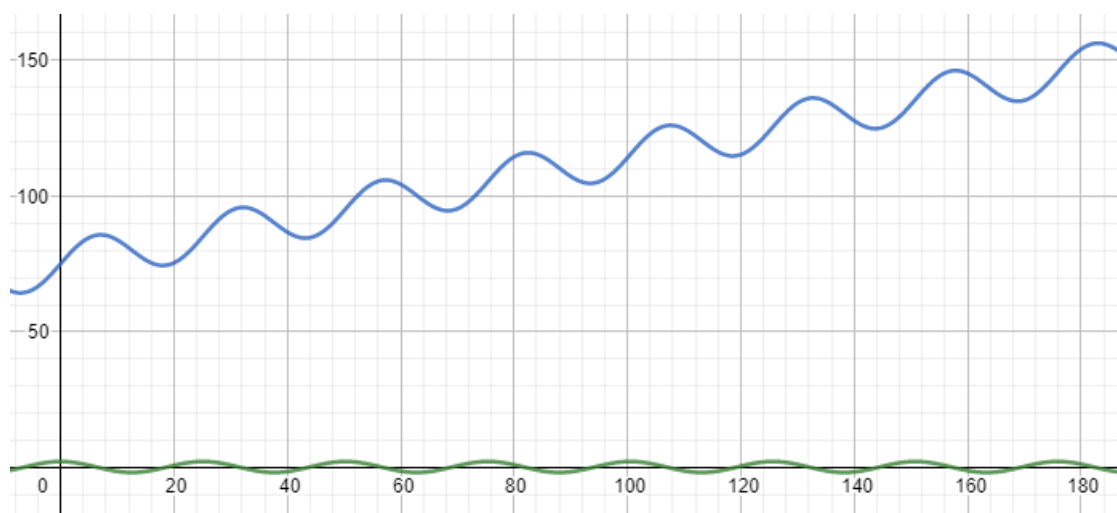
$$c = 75 - 0.4 \cdot (0) + 8 \cdot \sin(0.25 \cdot 0)$$

$$c = 75 - 0$$

$$c = 75$$

$$K(t) = 0.4t + 8 \sin(0.25t) + 75$$

Opgave C)



Opgave D)

$$K(90) = 0.4 \cdot 90 + 8 \sin(0.25 \cdot 90) + 75$$

$$K(90) = 107,1026$$

Opgave E)

$$K(t) = 150$$

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$$0.4t + 8 \sin(0.25 \cdot t) = 150$$

CAS

$$\text{Define: } K_{\text{mærke}}(t) = 0.4 + 2 \cos(0.25t)$$

Opgave A

$$K_{\text{mærke}}(5) \approx 1,030645$$

Opgave B

$$K = \int 0.4 + 2 \cos(0.25t) dt$$

$$\text{Define: } K(t) = 0,4 \cdot t + 8 \cdot \sin(0,25 \cdot t) + C$$

$$K(0) = 75$$

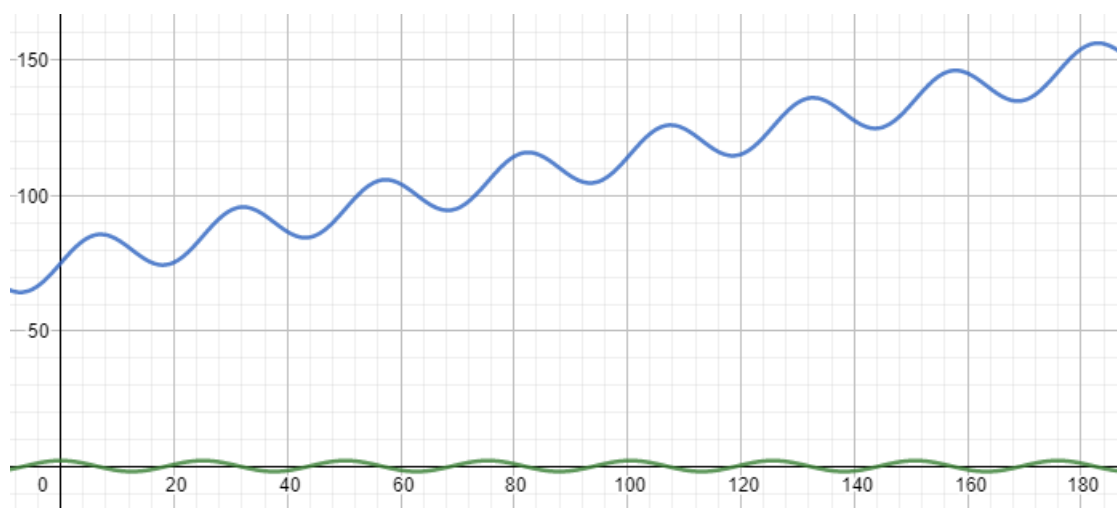


The equation is solved for C by WordMat.

$$C = 75$$

$$\text{Define: } K(t) = 0.4t + 8 \sin(0.25t) + 75$$

Opgave C



Opgave D

$$K(90) \approx 107,1026$$

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Opgave E

$$K(t) = 150$$

The equation is solved numerically for t by WordMat.

$$t \approx 177,9259 \quad \vee \quad t \approx 188,7447 \quad \vee \quad t \approx 198,6874$$

Solutions where found using numeric methods. More solutions may exist though