

## Facit tenta 2020

1. (a) 11%

(b) 63g

(c)  $W = 1.36M + \lg(0.036) \approx 1.36M - 1.44$

2. (a) -

(b) Minsta:  $f(0) = f(3) = 2$ . Största  $f(5) = 2\sqrt{\frac{13}{3}} \approx 4.16$ .

(c)  $y = \frac{3}{2}x + 2$

3. (a) -

(b)  $\det(A) = 3 \cdot (-2) - 0 \cdot 5 = (-2) \cdot 3 = \lambda_1 \cdot \lambda_2$ .

(c)

$$\lambda_1 = -2 : \begin{pmatrix} 0 \\ t \end{pmatrix}, t \neq 0, \quad \lambda_2 = 3 : \begin{pmatrix} t \\ t \end{pmatrix}, t \neq 0.$$

(d) T.ex.

$$D = \begin{bmatrix} -2 & 0 \\ 0 & 3 \end{bmatrix}, \quad C = \begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix}.$$

(e)

$$A^7 = \begin{bmatrix} 3^7 & 0 \\ 2^7 + 3^7 & -2^7 \end{bmatrix} = \begin{bmatrix} 2187 & 0 \\ 2315 & -128 \end{bmatrix}$$

4. (a)  $x_n = \left(\frac{n}{3} + 1\right) 3^n$

(b)  $x_{10} = 13 \cdot 3^9 = 255879$

5. (a)  $y(x) = \sqrt{e^x + x}$

(b)  $y(x) = 2x^{3/2} - 1/x + x^4/2 + C$

(c) 20