$x^2+x+1=0$ Cafourek

$t=10$ $x=3$

$10-$

1) generuje

2) $f = \begin{pmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{pmatrix}$

3) $g = \begin{pmatrix} 1 & 1 & 0 \\ 0 & 1 & 0 \end{pmatrix}$

4) $f$: $\ker(f) = \{\vec{0}\}$ $\quad \operatorname{im}(f) = R^3$

$\operatorname{def}(f) = 0$ $\quad \operatorname{rank}(f) = 2$

$g$: $\cancel{\ker(g) = \{\vec{0}\}}$ $\ker(g) = \{\ \}$ $\operatorname{im}(g) = R^2$

$\cancel{\operatorname{def}(f) = 0}$ $\operatorname{def}(g) = 1$ $\operatorname{rank}(g) = 2$

5) $n = q = 2$

$m = p = 3$

6) $f \cdot g = \begin{pmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{pmatrix} \cdot \begin{pmatrix} 1 & 1 & 0 \\ 0 & 1 & 0 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 \\ 1 & 1 & 0 \\ 0 & 1 & 0 \end{pmatrix}$

$g \cdot f = \begin{pmatrix} 1 & 1 & 0 \\ 0 & 1 & 0 \end{pmatrix} \cdot \begin{pmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$

7) a) $\begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix}$

b) $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

c) $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

$\begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$

8) $f =$ ~~iso~~ mono...

$g =$ epi...

$fg =$ iso...

$gf =$ iso...

Cafourek

9) a)

b)

c)

d)

e)

f)

10. $T_{K_2 \mapsto B} = \begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}^{-1} = \begin{pmatrix} 1/2 & -1/2 \\ 0 & 1 \end{pmatrix}$

11. $\mathrm{coord}_B(\vec{v}) = \begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 3 \\ -2 \end{pmatrix} = \begin{pmatrix} 5/2 \\ -2 \end{pmatrix}$

$\begin{pmatrix} 1/2 & -1/2 \\ 0 & 1 \end{pmatrix}$

12. a) $\begin{pmatrix} 1/2 & -1/2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}$

$g_f = \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$

b) $\cancel{\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}} =$

$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}$

13. $\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

14.