(4) $\cos 3\alpha = \cos(2\alpha + \alpha)$

$= \cos 2\alpha \cos\alpha - \sin 2\alpha \sin\alpha$

$= (2\cos^2\alpha - 1)\cdot\cos\alpha - 2\sin\alpha\cos\alpha \cdot \sin\alpha$

$= 2\cos^3\alpha - \cos\alpha - 2\sin^2\alpha\cos\alpha$

$= 2\cos^3\alpha - \cos\alpha - 2(1-\cos^2\alpha)\cdot\cos\alpha$

$= 2\cos^3\alpha - \cos\alpha - 2\cos\alpha + 2\cos^3\alpha$

$= 4\cos^3\alpha - 3\cos\alpha$

(5) $\cos^2 2x = \dfrac{1+\cos 4x}{2} = \dfrac{1+(-\frac{1}{3})}{2} = \dfrac{\frac{2}{3}}{2} = \dfrac{2}{6} = \dfrac{1}{3}$

$\Rightarrow \cos 2x = \sqrt{\frac{1}{3}} = \dfrac{\sqrt{3}}{3}$ v $-\dfrac{\sqrt{3}}{3}$

$\sin^2 2x = \dfrac{1-\cos 4x}{2} = \dfrac{1-(-\frac{1}{3})}{2} = \dfrac{\frac{4}{3}}{2} = \dfrac{4}{6} = \dfrac{2}{3}$

$\Rightarrow \sin 2x = \sqrt{\frac{2}{3}} = \dfrac{\sqrt{6}}{3}$ v $-\dfrac{\sqrt{6}}{3}$

(6) $\dfrac{-2\cot\alpha}{1-\cot^2\alpha} = \dfrac{-2\frac{1}{\tan\alpha}}{1-\frac{1}{\tan^2\alpha}} = \dfrac{\frac{-2}{\tan\alpha}}{\frac{\tan^2\alpha - 1}{\tan^2\alpha}}$

$= \dfrac{-2}{\tan\alpha} \cdot \dfrac{\tan^2\alpha}{\tan^2\alpha - 1} = \dfrac{-2\tan\alpha}{\tan^2\alpha - 1}$

$= \dfrac{2\tan\alpha}{1-\tan^2\alpha} = \tan 2\alpha$

① a) $f(x) = \dfrac{3x^2+5x-2}{x^2-x-6}$

T: $3x^2+5x-2=0$ $\quad D=49 \quad x_1=-2 \quad x_2=\frac{1}{3}$

N: $x^2-x-6=0$ $\quad D=25 \quad x_1=-2 \quad x_2=3$

VA: $x=3$ en perforatie bij $x=-2$

HA of SA

$$\begin{array}{r|l} 3x^2+5x-2 & x^2-x-6 \\ \hline -3x^2 \pm 3x \pm 18 & 3 \\ \hline 8x+16 & \end{array}$$

$\Rightarrow$ HA: $y=3$

b) $g(x) = \dfrac{-x^3+x^2-2}{x^2}$

$$\begin{array}{r|rrr||r} & -1 & 1 & 0 & -2 \\ -1 & & 1 & -2 & 2 \\ \hline & -1 & 2 & -2 & 0 \end{array}$$

T: $x=-1 \quad \vee \quad -x^2+2x-2=0$

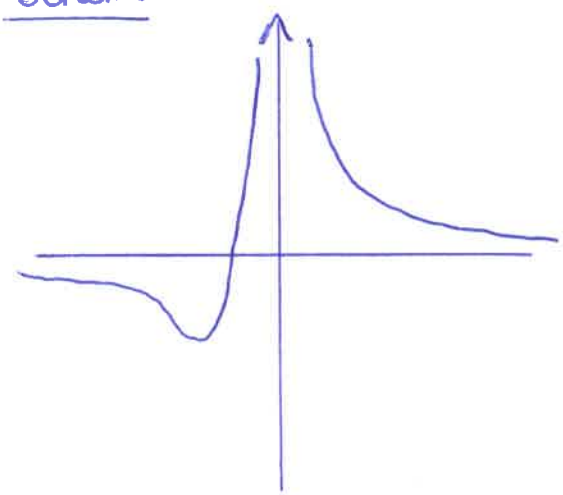
$D = 4-4(-1)(-2) = 4-8<0$

N: $x=0$

VA: $x=0$

HA of SA $\quad g(x) = -x+1-\dfrac{2}{x^2} \Rightarrow$ SA: $y=-x+1$

② Schets



dom: $\mathbb{R}_0$

VA: $x=0$

nulw: $x=$

HA: $y=0$

x		-1		0	
$f(x)$	$\searrow$	-1	$\nearrow$	/	$\searrow$
		abs min			