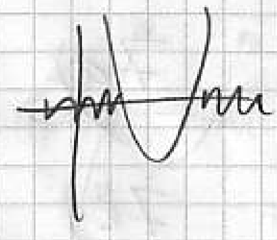
BI/KI intro/del A 18/8-2010 (1)

1a) $x^{5/2} y^{-1/2} \left(= x^2\sqrt{\frac{x}{y}}\right)$ b) $\frac{-2\sqrt{b}}{a-b}$ c) $\frac{a-2b}{a-b}$

2a) $\sqrt{x}=t$ $t^2+2t-1=0$ $t=-1\pm\sqrt{1+1}$ $x=(\sqrt{2}-1)^2$

2b) $(x+2)^2=x+3 \Leftrightarrow x^2+3x+1=0$ $x=-\frac{3}{2}\pm\sqrt{\frac{9}{4}-1}$

$x=(-3+\sqrt{5})/2$

3a) $x^2-5x+6=0$ $x=\frac{5}{2}\pm\sqrt{\frac{25}{4}-6}=\frac{5\pm1}{2}$ 

3b) $\frac{3(x-1)+2x(x-1)-x}{x(x-1)}>0 \Leftrightarrow \frac{2x^2-3}{x(x-1)}>0$

$x<-\sqrt{\frac{3}{2}}$ eller $0<x<1$ eller $x>\sqrt{\frac{3}{2}}$

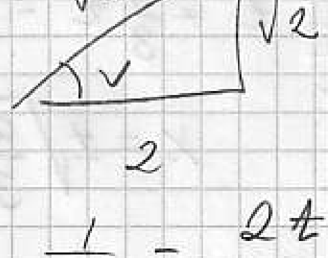
4) $\pm1, \pm3$

$$\begin{array}{r}
x^2+4x+1 \\
x-3 \,\big)\, x^3+x^2-11x-3 \\
-(x^3-3x^2) \\
\hline
4x^2-11x-3 \\
-(4x^2-12x) \\
\hline
x-3 \\
-(x-3) \\
\hline
0
\end{array}$$

$(x-3)(x+2-\sqrt{3})(x+2+\sqrt{3})$

5a) $1+\ln\frac{2x}{x^4}=0$ $\frac{2}{x^3}=e^{-1}$ $x=\sqrt[3]{2e}$

5b) $t^2+2t=3$ $t=-1\pm\sqrt{1+3}$ $e^x=1$ $x=0$

6a) 

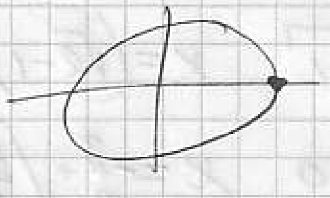
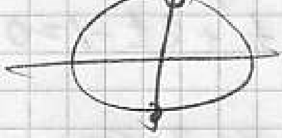
$\sin v=\sqrt{\frac{1}{3}}$

6b) $\frac{1}{\sqrt{2}}=\frac{2t}{1-t^2}$ $t^2+2\sqrt{2}t-1=0$ $t=-\sqrt{2}\pm\sqrt{2+1}$

$\tan v=-\sqrt{2}\pm\sqrt{3}$

6c) $1-\cos^2 v+\cos v = 1$ $\quad \cos^2 v = \cos v$

$\cos v = 1$ eller $\cos v = 0$

$v = n2\pi$ eller $v = \frac{\pi}{2}+n\pi$

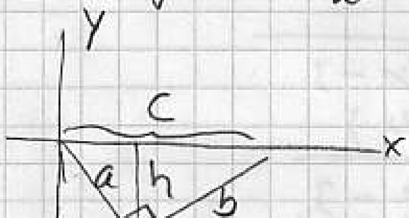
7a) $k = \frac{1-0}{-2-4} = -\frac{1}{6}$ $\quad y = -\frac{1}{6}(x-4)$

7c) $(x+1)^2+4\left(y-\frac{1}{8}\right)^2 = 1+\frac{4}{64}-\frac{1}{2} = \frac{16+1-8}{16} = \frac{9}{16}$

$\frac{(x+1)^2}{\frac{9}{16}} + \frac{\left(y-\frac{1}{8}\right)^2}{\frac{1}{4}\cdot\frac{9}{16}} = 1$ $\quad$ centr $\left(-1, \frac{1}{8}\right)$

halvaxlar $\frac{3}{4}, \frac{3}{8}$

7b) $y+2 = \frac{1}{2}(x-1)$ $\quad y=0 \Rightarrow x=5$



$A = \frac{ab}{2} = \frac{1}{2}\sqrt{1^2+2^2}\sqrt{4^2+2^2}$

$= \frac{ch}{2} = \frac{1}{2}\cdot 5\cdot 2 = 5$

8a) $f'(x) = -\frac{2}{x^2}+3x^2+1$ $\quad f'(1) = 2$

T: $y-4 = 2(x-1)$ $\quad$ N: $y-4 = -\frac{1}{2}(x-1)$

8b) $x^2 = t$ $\quad -\frac{2}{t}+3t+1 = 0$ $\quad t^2+\frac{1}{3}t-\frac{2}{3} = 0$

$t = -\frac{1}{6}\pm\sqrt{\frac{1}{36}+\frac{2}{3}} = \frac{-1\pm 5}{6}$ $\quad x = \pm\sqrt{\frac{2}{3}}$