Antwoorden van het Tentamen Aansluitcursus van 24-10-2005

1	$\dfrac{2(p-4)(p+4)}{(p-4)(p-1)} = \dfrac{2(p+4)}{p-1}$ en $p \neq 4$	2p
2	$(3x-1)^2(3x-1-2x) = (3x-1)^2(x-1)$	2p
3	$(x^2-4)(x^2+3) = 0$	1p
	$x = \pm 2$	1p
4	$\binom{4}{0}(2x)^4 + \binom{4}{1}(2x)^3 + \binom{4}{2}(2x)^2 + \binom{4}{3}(2x) + \binom{4}{4}\cdot 1 =$	1p
	$16x^4 + 32x^3 + 24x^2 + 8x + 1$	1p
5	$\frac{1}{2}\cdot 13\cdot(-3+21) = 117$	2p
6	$\dfrac{5\cdot 0{,}8^2}{1-0{,}8} = 16$	2p
7	$f^1(x) = \dfrac{1}{\sqrt{1-(2x)^2}}\cdot 2 = \dfrac{2}{\sqrt{1-4x^2}}$	2p
8	$\sqrt{2x-3} + 2x\cdot\dfrac{1}{2\sqrt{2x-3}}$	1p
	$= \sqrt{2x-3} + \dfrac{x}{\sqrt{2x-3}} = \dfrac{3x-3}{\sqrt{2x-3}}$	1p
9	$f(x) = 3x^{-1\frac{1}{2}} - \dfrac{1}{x}$	
	$F(x) = -\dfrac{6}{\sqrt{x}} - \ln\lvert x\rvert + C$	2p
10	$F(x) = \frac{1}{2}\sin(x^2+8x+3) + C$	2p
11	$\sin x(2\sin x + 1) = 0 \Rightarrow \sin x = 0 \vee \sin x = -\frac{1}{2}$	1p
	$x = 0 \vee x = \pi \vee x = 2\pi \vee x = 1\frac{1}{6}\pi \vee x = 1\frac{5}{6}\pi$	1p
12	$\cos(-\frac{1}{8}\pi) = \cos(\frac{1}{8}\pi)$ en $\cos 2x = 2\cos^2 x - 1$	1p
	$\cos(\frac{1}{4}\pi) = \frac{1}{2}\sqrt{2}$ dus $\cos(-\frac{1}{8}\pi) = \cos(\frac{1}{8}\pi) = \sqrt{\frac{1}{2} + \frac{1}{4}\sqrt{2}}$	1p

13 $n=1$ geeft 9-1=8 is deelbaar door 4 klopt 1p

Stel 9^m-5^{m-1} is deelbaar door 4 dan : $9^{m+1}-5^m=$ 1p

$4\cdot 9^m+5\cdot 9^m-5\cdot 5^{m-1}=4\cdot 9^m+5\cdot(9^m-5^{m-1})$ deelbaar door 4 dus klopt! 2p

14 $n=1$ geeft $3+2=\frac{1}{2}(3+7)$ klopt 1p

Stel $\sum_{k=1}^{m}(3k+2)=\frac{1}{2}m(3m+7)$ dan $\sum_{k=1}^{m+1}(3k+2)=$

$\sum_{k=1}^{m}(3k+2)+3(m+1)+2=$ 1p

$\frac{1}{2}m(3m+7)+3m+5=\frac{3}{2}m^2+\frac{13}{2}m+\frac{17}{2}=\frac{1}{2}(3m^2+13m+10)$

$\frac{1}{2}(m+1)(3m+10)=\frac{1}{2}(m+1)(3(m+1)+7)$ klopt! 2p

15 Stel $z=x+iy$ dan $|x-1+(y+3)i|=|x+5+((y-5)i|$ 1p

$(x-1)^2+(y+3)^2=(x+5)^2+(y-5)^2$ 1p

$y=\frac{3}{4}x+\frac{5}{2}$ 2p

16 $(z-3)^2=-2$ 1p

$z=3\pm i\sqrt{2}$ 1p

17 $z^3=\frac{1}{8}e^{-\frac{1}{2}\pi i}$ dus $z=\frac{1}{2}e^{(-\frac{1}{6}\pi+\frac{2}{3}k\pi)i}$ 1p

$z=\frac{1}{2}e^{-\frac{5}{6}\pi i}\vee z=\frac{1}{2}e^{-\frac{1}{6}\pi i}\vee z=\frac{1}{2}e^{\frac{1}{2}\pi i}$ 1p

$z=-\frac{1}{4}\sqrt{3}-\frac{1}{4}i\vee z=\frac{1}{4}\sqrt{3}-\frac{1}{4}i\vee x=\frac{1}{2}i$ 1p

18 $(z-2)^2-4+11-24i=0$ dus $(z-2)^2=-7+24i$ 1p

$w^2=25(-\frac{7}{25}+\frac{24}{25}i)=r^2(\cos 2\phi+i\sin 2\phi)$ en $r=5$ 1p

$\cos 2\phi=2\cos^2\phi-1$ en $\sin 2\phi=2\sin\phi\cos\phi$ geeft:

$\cos\phi=-\frac{3}{5}$ geeft $\sin\phi=-\frac{4}{5}$ en $\cos\phi=\frac{3}{5}$ geeft $\sin\phi=\frac{4}{5}$ 1p

$w=-3-4i$ of $w=3+4i$

$z=-1-4i$ of $z=5+2i$ 1p