MVE335 $\quad z^{13} = 2^{13}\left(\cos\left(\frac{-13\cdot 3\pi}{4}\right)+i\sin\left(\frac{-13\cdot 3\pi}{4}\right)\right) = 2^{13-1/2}(1+i)$

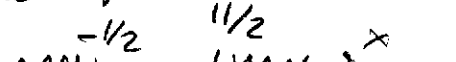
Matte 1 26/10-2017 Svar

1a $\frac{4-a^2}{a(a+2)} = \frac{(2-a)(2+a)}{a(a+2)} = \frac{2-a}{a}$

1b $\left(\frac{2(2-\sqrt{2})}{2}\right)^2 - 6 = -4\sqrt{2}$

1c $5-6>2x$ el. $2x>5+6$

$-1/2>x$ el $x>11/2$



1d $\frac{2(x+1)-3x}{x(x-2)(x+1)} = \frac{2-x}{x(x-2)(x+1)} = \frac{-1}{x(x+1)}$

2a $\frac{1}{9}+\frac{1}{R}=\frac{1}{3}$ $\quad \frac{1}{R}=\frac{1}{3}-\frac{1}{9}=\frac{2}{27}$ $\quad R=13.5$

2b $x^2+2x-2=0$

$x = \frac{-2\pm\sqrt{4-4\cdot 1\cdot(-2)}}{2}$

$= \frac{-2\pm 2\sqrt{3}}{2} = -1\pm\sqrt{3}$

x^3+6x^2+6x-8 : $x+4$ $=$ x^2+2x-2

$-(x^3+4x^2)$

$2x^2+6x-8$

$-(2x^2+8x)$

$-2x-8$

$-(-2x-8)$

0

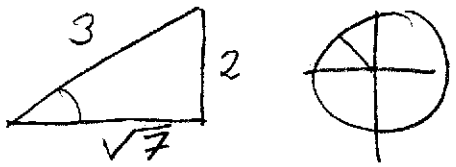
2c $y = \frac{3-(-4)}{2-1}x+m$ $\quad 3=7\cdot 2+m$ $\quad y=7x-11$

$9x-2(7x-11)+3=0$ $\quad -5x+25=0$ $\quad \begin{cases} x=5 \\ y=24 \end{cases}$

2d $(x+\frac{7}{2})^2+(y-3)^2 = \frac{49}{4}+9-1 = \frac{49+32}{4} = \left(\frac{9}{2}\right)^2$

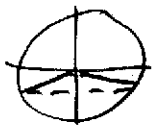
medelpkt $=(-7/2,3)$ radie $=\frac{9}{2}$

3a



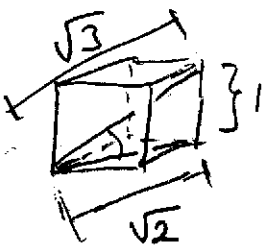
$\cos x = -\frac{\sqrt{7}}{3}$ $\quad \tan x = -\frac{2}{\sqrt{7}}$

3b $\sin 2x = -\frac{1}{2}$



$\begin{cases} 2x = -\frac{\pi}{6}+n2\pi, & x=-\frac{\pi}{12}+n\pi \\ 2x = -(\pi-\frac{\pi}{6})+n2\pi, & x=-\frac{5\pi}{12}+n\pi \end{cases}$

3c



$\tan\varphi = \frac{1}{\sqrt{2}}$ $\quad \varphi = \arctan\frac{1}{\sqrt{2}}$

3d $P_0+2v = (5,2)$ $\quad v = \frac{(-7,-4)-(5,2)}{3} = (-4,-2)$

$P_0 = (5,2)-2(-4,-2) = (13,6)$

4a $z-w = -10-10i$ $\quad \frac{z+w}{w} = \frac{-8-4i}{1+3i} = \frac{(-8-4i)(1-3i)}{10} = \frac{-20+20i}{10}$

$= 2\sqrt{2}\left(\cos\frac{3\pi}{4}+i\sin\frac{3\pi}{4}\right)$ $\quad 4b\ \left((z-2)^2-(i\sqrt{2})^2\right)(z-3)(z+1) = z^4-6z^3+11z^2-18$

5a subst z^3

5b $2\cos^3 x - 2\cos^2 x \ldots = 0$

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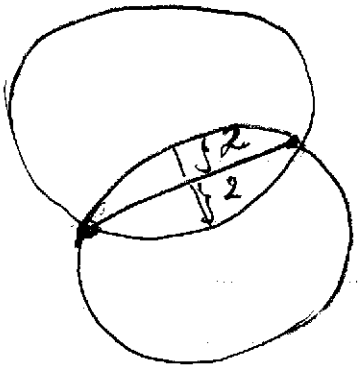

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