MVE 335 21/12-2017 SVAR

-0.5 ... 35

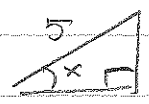
1a $\frac{1-a^2}{(a+1)^2} = \frac{1-a}{a+1}$ 1b $-2\sqrt{3}$ 1c $-0.5 < x < 3.5$

1d $-\frac{1}{x(x-2)}$ 2a $\frac{1}{5} - \frac{1}{8} = \frac{1}{R}$ $R = \frac{40}{3}$ 2b $(x+1)(x^2+x-4) = 0$

$x = \frac{-1 \pm \sqrt{1+16}}{2}$

2c $y = 3 + \frac{10}{2}(x-10) = \frac{3x+1}{2}$ $7x = -6+101$ $x = 95/7$

2d $(x+1)^2 + (y-2)^2 = 11+1+4 = 16$ $(-1,2)$ radie = 4

3a 

$\sqrt{25-12} = \sqrt{13}$ $\sin x = \frac{\sqrt{13}}{5}$ $\tan x = \sqrt{\frac{13}{12}}$

3b $\tan 2x = -\frac{1}{\sqrt{3}}$ $2x = -\frac{\pi}{6} + n\pi$ $x = -\frac{\pi}{12} + n\frac{\pi}{2}$

3c $2v = (3,1) - (1,-2) = (2,3)$ $v = (1, \frac{3}{2})$ $\cos\varphi = \frac{u \cdot v}{\|u\|\|v\|} = \frac{-4}{\sqrt{5}\sqrt{13}}$

$\varphi = 119.7°$ 3d $(5,2) + t(2,-3) = (-7,-8) + s(4,-2)$ $t = 8$

$s = 7$

kollision!

4a $(1+8i) - i(3-2i) = 1 + 2i^2 + 8i - 3i = -1 + 5i$

$\frac{1+8i}{3-2i} = \frac{(1+8i)(3+2i)}{13} = \frac{3-16+i(2+24)}{13} = -1+2i$

$= \sqrt{5}(\cos(\underbrace{\arctan(-2)+\pi}_{116.6°}) + i\sin(\arctan(-2)+\pi))$

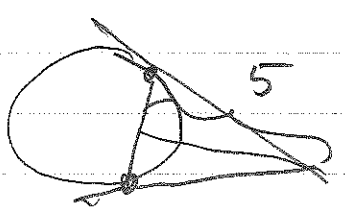
4b $(z-(-i\sqrt{3}-3))(z-(i\sqrt{3}-3))(z^2-4) = ((z+3)^2+3)(z^2-4)$

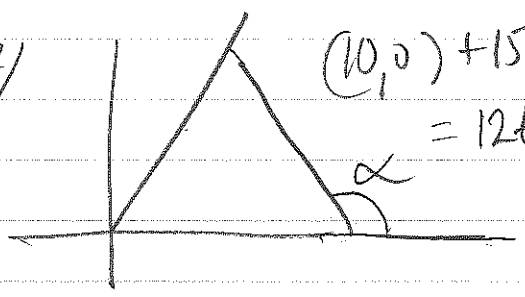
$= z^4 + 6z^3 + 8z^2 - 24z - 48$

4c $z = -\sqrt{3} - 3i = 2\sqrt{3}(\cos(-\frac{2\pi}{3}) + i\sin(-\frac{2\pi}{3}))$

$z^9 = 2^9 3^4 \sqrt{3}(\cos(-6\pi) + i\sin(-6\pi)) = 2^9 3^4 \sqrt{3}$

5a) subst z^2 5b dubbla vinkel...

6) 

7) 

$(10,0) + 15t(\cos\alpha, \sin\alpha)$

$= 12t(\cos 60, \sin 60)$