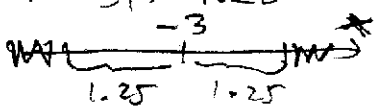
MVF335 SVAR 26/8 -2019

1a $x = b - a$ **1b** $-\frac{1}{x(x+h)}$ **1c** $\frac{x-4}{x-3}$ **1d** $|x+3| > 1.25$



$x < -4.25$ el $x > -1.75$

2a $\frac{1}{4} + \frac{1}{R} = \frac{3}{2} \Leftrightarrow R = \frac{1}{\frac{3}{2} - \frac{1}{4}} = \frac{4}{5}$

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

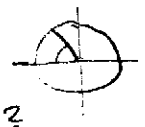
2c $y = \frac{1-0}{3-1}(x-1) = \frac{1}{2}(x-1) \Rightarrow 3x + 2\cdot\frac{1}{2}(x-1) + 4 = 0 \Leftrightarrow 4x = -3 \Leftrightarrow x = \frac{-3}{4}$

$y = \frac{1}{2}\cdot\frac{-7}{4}$

2d $(x-6)^2 + (y+4)^2 = 12 + 36 + 16 = 64 = 8^2$

medelpkt $= (6, -4)$ radie $= 8$

3a

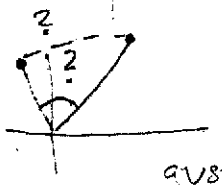


$\cos x = -\frac{2}{\sqrt{7}} \quad \sin x = \frac{\sqrt{3}}{\sqrt{7}}$

3b $\tan\theta = -\frac{5}{2} \quad A^2 = 2^2 + 5^2 \quad A = \sqrt{29}$

$\theta = \arctan(-\frac{5}{2}) = -68.2°$

3c



$\cos\theta = \frac{(-2,3)\cdot(3,4)}{\sqrt{4+9}\cdot\sqrt{9+16}} = \frac{6}{\sqrt{13}\cdot 5} \quad \theta = \arccos\frac{6}{5\cdot\sqrt{13}} = 70.6°$

avstånd $= \sqrt{5^2+1^2} = \sqrt{26}$

3d $(1,2) + t(3,-5) = (3,1) + s(2,-3)$

$1 + 3t = 3 + 2s$ (5)

$2 - 5t = 1 - 3s$ (3)

$5 + 6 = 15 + 3 + s \quad s = -7 \Rightarrow (-11, 22)$

4a $|z| = \sqrt{2^2+1^2} = \sqrt{5}$, $\arg z = \arctan(\frac{1}{-2}) + 180 = 153.4°$

$z = \sqrt{5}(\cos 153.4° + i\sin 153.4°) \quad w = 5(\cos(-36.9°) + i\sin(-36.9°))$

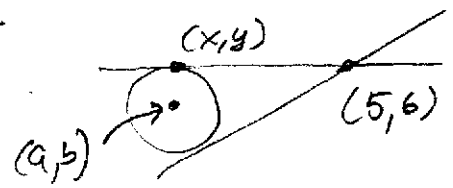
4b $z\cdot w = 48(\cos(-120°) + i\sin(-120°)) \quad \frac{z}{w} = 3(\cos(150°) + i\sin(150°))$

4c $(x - (-3+\frac{1}{2}i))(x - (-\frac{3}{2} - \frac{1}{2}i)) = (x+\frac{3}{2})^2 - (\frac{1}{2}i)^2 = x^2 + 3x + \frac{5}{2} = 0$

4d $z^7 = \frac{1}{2^7}(\cos(-\frac{7\pi}{6}) + i\sin(-\frac{7\pi}{6})) = \frac{1}{2^7}(-\frac{\sqrt{3}}{2} + \frac{i}{2}) = \frac{1}{2^8}(-\sqrt{3} + i)$

5a $z^3 = t$ .... **5b** $\sin x = t$ ....

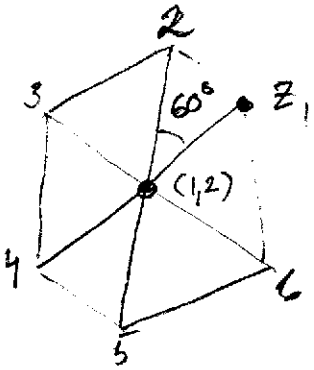
6



$(x-5, y-6)\cdot(x-a, y-6) = 0$

$x^2 + y^2 + 2x + 4y = 4$

7



$z_{1,4} = (1,2) \pm 3\cdot(3,4)$

$z_{2,5} = (1,2) \pm 3\cdot(\cos(\arctan\frac{4}{3} + 60), \sin(\quad))$

$z_{3,6} = (1,2) \pm 3(\cos(\arctan\frac{4}{3} + 120), \sin(\quad))$

$\cos(\arctan\frac{4}{3} + 60) = \cos(\arctan\frac{4}{3})\cos 60$

$- \sin(\arctan\frac{4}{3})\sin 60 = \frac{3}{5}\cdot\frac{1}{2} - \frac{4}{5}\cdot\frac{\sqrt{3}}{2}$ ....