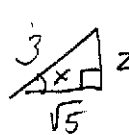



1a/ $\frac{1-a^2}{a(a+1)} + 1 = \frac{1+a}{a(a+1)} = \frac{1}{a}$ 1b/ $(\sqrt{2}+1)^2 - 3 = 2\sqrt{2}$

1c/ x^2+1 eller $x \leq -2$ ~~x^2-1~~ 1d/ $\frac{(x+1)(x-1)+1-6x}{(x-6)(x-1)} = \frac{x^2-6x}{(x-6)(x-1)} = \frac{x}{x-1}$

2a/ $\frac{1}{6} + \frac{1}{R} = \frac{5}{4}$ $\frac{1}{R} = \frac{5}{4} - \frac{1}{6} = \frac{26}{24}$ $R = \frac{12}{13}$ 2b/ $(x+2)(x^2+3x-5) = 0$ $x = \frac{-3 \pm \sqrt{29}}{2}$

2c/ $y = 8 + \frac{-12}{6}(x-7) = -2x + 22 = \frac{x}{2} + 2$ 2d/ $(x+5)^2 + (y-10)^2 = 19 + 25 + 100 = 12^2$
 $x = 20 \cdot \frac{2}{5} = 8$ $y = 6$ m.p. = $(-5, 10)$ $r = 12$

3a/  $\cos x = \frac{\sqrt{5}}{3}$ $\sin x = \frac{2}{3}$ b/ $\cos 2x = -\frac{1}{2}$  $2x = \pm \frac{2\pi}{3} + n2\pi$
 $x = \pm \frac{\pi}{3} + n\pi$

3c/ $v = \frac{1}{3}((-5, 4) - (1, -2)) = \frac{1}{3}(-6, 6) = (-2, 2)$ $\frac{u \cdot v}{|u||v|} = \frac{(1, -2) \cdot (-2, 2)}{\sqrt{5} \cdot 2\sqrt{2}} = \frac{-3}{\sqrt{10}}$

3d/ $(-1, 2) + t(3, -5) = (2, -1) + s(2, -4)$ 161.6°
 $-1 + 3t = 2 + 2s$ $2 - 5t = -1 - 4s$ $t = 3 \Rightarrow s = 3 \Rightarrow$ collision i $(8, -13)$

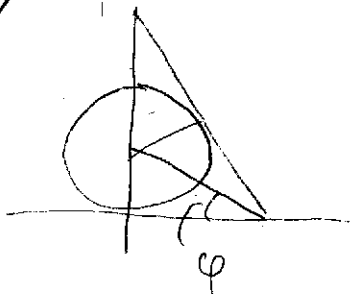
4a/ $(1+2i)(3-5i) = 13+i$ $\frac{1+2i}{3-5i} = \frac{(1+2i)(3+5i)}{34} = \frac{-7+11i}{34} = \frac{\sqrt{170}}{34}(\cos \varphi + i \sin \varphi)$

4b/ $(x-(2+i))(x-(2-i))(x-(1-2i))(x-(1+2i))$ $\varphi = \sqrt{\arctan \frac{11}{7}} + \pi = 122^\circ$
 $= ((x-2)^2 + 1)((x-1)^2 + 4) = 25 - 30x + 18x^2 - 6x^3 + x^4$

4c/ $z^5 = 2^5(\cos(\frac{5\pi}{6}) + i \sin(\frac{5\pi}{6})) = 2^5(-\frac{\sqrt{3}}{2} - \frac{i}{2}) = -16(\sqrt{3} + i)$

5a/ $z^2 = t$ 5b/ dubbla vinkel $\Rightarrow -\sqrt{3} = \tan 2x$

6/



$A = \frac{1}{\tan \varphi} + \frac{1}{2} \tan 2\varphi$

7/ $(2^x + 2^{-x})^3 = \dots$