

1a $x=a$ 1b $2x+2h$ 1c $\frac{x+2}{x+3}$ 1d $-\frac{1}{2}-\frac{3}{4} < x < -\frac{1}{2}+\frac{3}{4}$

2a $\frac{1}{2} + \frac{1}{r} = \frac{6}{5}$ $R = \frac{10}{7}$ 2b $(x-3)(x^2-2x-1)$ 2c $y = \frac{-1}{5}(x-3) - 4x - \frac{x-3}{5} + 5 = 0$
 $x = \frac{28}{21} = \frac{4}{3}$ $y = \frac{1}{3}$ $x = 1 \pm \sqrt{2}$

2d $(x+2)^2 + (y-3)^2 = 23+4+9 = 36$ 3a $\frac{\sqrt{2}}{\sqrt{5}} \sqrt{2}$ $\sin x = \sqrt{\frac{2}{7}}$ $\cos x = \sqrt{\frac{5}{7}}$
 $(-2, 3)$ radii = 6

3b $A^2 = 1^2 + 3^2 = 10$ $\tan \theta = -3$ 3c $\text{Avst.} = \sqrt{2^2 + 6^2} = 2\sqrt{10}$
 $A = \sqrt{10}$ $\theta = \arctan(-3) + 180^\circ = 108.4^\circ$ $\theta = \arccos\left(\frac{3-8}{\sqrt{17} \cdot \sqrt{13}}\right) = 110^\circ$

3d $(1, -7) + t(3, 5) = (-12, -3) + s(4, 3)$

$$\begin{aligned} 1+3t &= -12+4s & \times 3 \\ -7+5t &= -3+3s & \times (-4) \end{aligned}$$

$31 - 11t = -36 + 12$

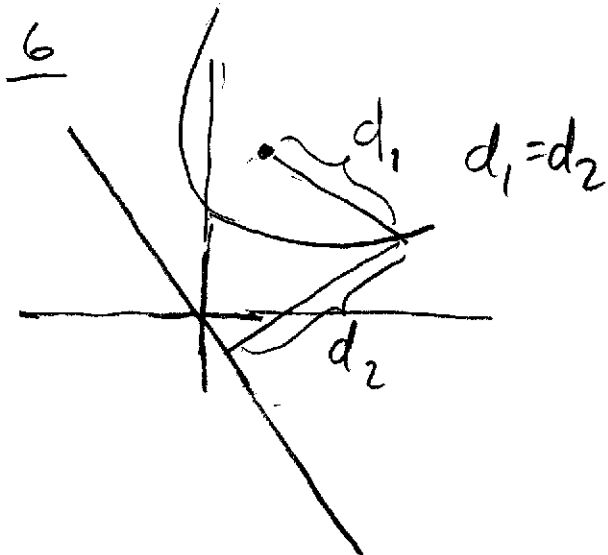
$55 = 11t \quad t = 5 \Rightarrow s = \frac{13+15}{4} = 7$

4b $zw = 12(\cos(-40^\circ) + i\sin(-40^\circ))$ 4c $(x - (-\frac{1}{2} + 2i))(x - (-\frac{1}{2} - 2i))$
 $\frac{z}{w} = 3(\cos 90^\circ + i\sin 90^\circ)$ $= (x + \frac{1}{2})^2 - (2i)^2 = x^2 + x + \frac{1}{4} + 4$
 $4x^2 + 4x + 17$

4d $z^5 = 2^5 \left(\cos \frac{-10\pi}{3} + i\sin \frac{-10\pi}{3} \right) = 2^5 \left(\cos \frac{2\pi}{3} + i\sin \frac{2\pi}{3} \right) = 16(-1 + i\sqrt{3})$

5a $2(1 + iz^4) = z^8 \quad z^4 = t \dots$

5b $\frac{1 - \cos 2x}{2} = 2\sin 2x + \cos 2x$ $3\cos 2x + 4\sin 2x = 1 \dots$



7 $| (x, y, z) - P |^2 = | (x, y, z) - Q |^2$
 $= | (x, y, z) - R |^2$