Fábián T. Nikolett RDD2XA

(1) a)

$z_1 = 1-2i$

$z_2 = 1+3i$

$z_3 = 5+\sqrt{7}i$

$$|z_3|^2 \cdot \left(\frac{z_1}{z_2}\right)^{10} = |5+\sqrt{7}i|^2 \cdot \frac{(1-2i)^{10}}{(1+3i)^{10}} = 25-7+2\sqrt{7}i \cdot \frac{(1-2i)^{10}}{(1+3i)^{10}} = \frac{(18+2\sqrt{7}i)\cdot(1-2i)^{10}}{(1+3i)^{10}} = \dots$$

b) $z^4 - 4z^3 + 5z^2 = 0$

$z^2(z^2 - 4z + 5) = 0$

1

$z^2 = 0$

$z_0 = 0$

$D = 16 - 4\cdot 5 = 4i^2$

$z_{2,3} = \frac{4 \pm 2i}{2}$

$z_2 = 2+i$

$z_3 = 2-i$