

$$1) a) z = 15i + (0,5 + 2i)^4 - 1/16$$

$$b) \frac{2i+3}{3+i} - \frac{i+4}{2i+1} + 0,3(i-3) = z$$

$$c) z = \frac{10i}{4i-2} - \frac{15+5i}{1+3i}$$

$$d) z = \frac{7}{20} i^3 \cdot [(3-2i^3)^4 - 1]$$

$$e) z = \frac{5i \cdot (3+9i)}{(3i+1)^2} - \frac{(4i-3)^2}{1-3i}$$

$$f) z^2 - (6i-4)z = 12i+9$$

$$\begin{array}{cccccc}
 & & & & & 1 \\
 & & & & 1 & 1 \\
 & & 1 & 2 & 1 & \\
 & 1 & 3 & 3 & 1 & \\
 1 & 4 & 6 & 4 & 1 &
 \end{array}$$

$$15i + \left(\frac{1}{2} + 2i\right)^4 - \frac{1}{16}$$

$$1 \left(\frac{1}{2}\right)^4 (2i)^0 + 4 \left(\frac{1}{2}\right)^3 (2i)^1 + 6 \left(\frac{1}{2}\right)^2 (2i)^2 + 4 \left(\frac{1}{2}\right)^1 (2i)^3 + 1 \left(\frac{1}{2}\right)^0 (2i)^4$$

$$1 \cdot \frac{1}{16} \cdot 1 + 4 \cdot \frac{1}{8} \cdot 2i + 6 \cdot \frac{1}{4} \cdot 4i^2 + 4 \cdot \frac{1}{2} \cdot 8i^3 + 1 \cdot 1 \cdot 16i^4$$

$$\frac{1}{16} + i - 6 - 16i + 16$$

$$15i + (10\frac{1}{16} - 15i) - \frac{1}{16}$$

$$10$$

$$z = 10 + 0i \\ (10 | 0)$$

$$6) \quad \underbrace{\frac{2i+3}{3-i}}_I - \underbrace{\frac{i^2+4}{2i+1}}_{II} + 0,3 \underbrace{(i-3)}_{III}$$

$$I \quad \frac{2i+3}{3-i} \cdot \frac{3-i}{3-i} = \frac{6i+9-2i^2-3i}{9-i^2} = \frac{11+3i}{10}$$

$$II \quad \frac{i+4}{2i+1} \cdot \frac{2i-1}{2i-1} = \frac{2i^2+8i-i-4}{4i^2-1} = \frac{-6+7i}{-5}$$

$$III \quad \frac{3}{10} \cdot (i-3) = \frac{3i-9}{10}$$

$$\frac{11+3i}{10} + \frac{-12+14i}{10} + \frac{3i-9}{10} = \frac{-10+20i}{10} = -1+2i$$

$$c) \quad \frac{10i}{4-2i} \cdot \frac{4+2i}{4+2i} = \frac{40i - 20}{16 - 4i^2} = \frac{40i - 20}{20} = 2i - 1$$

$$\frac{15+5i}{1+3i} \cdot \frac{1-3i}{1-3i} = \frac{15 - 45i + 5i - 15i^2}{1 - 9i^2}$$

$$= \frac{30 - 40i}{10} = 3 - 4i$$

~~$$z = 2i - 1 \quad (3 - 4i)$$~~

$$\frac{10i}{4i-2} \cdot \frac{4i+2}{4i+2} = \frac{-40 + 20i}{-20} = 2 - i$$

$$2 - i - 3 + 4i = -1 + 3i$$

