# Absolute ultraradical

## function Bring

$$brn_B(R)_N = \sum_{g=0}^{\dots} \frac{R^g}{g!} \prod_r^{[1;g)} (-Br + 1 + Ng)$$

$x^m = px^n + q, \qquad t = m - n$

$|q^t m^m| > |t^t n^n p^m|, \qquad x = v * brn_m \left(\frac{p}{mv^t}\right)_n, v^m = q$

$|q^t m^m| \le |t^t n^n p^m|, \qquad x_a = v * brn_n \left(\frac{v^t}{np}\right)_m, v^n = -\frac{q}{p}, \qquad x_b = v * brn_t \left(\frac{q}{tv^m}\right)_{-n}, v^t = p$

$x^5 = 3x^{2+0.3i} + 32, \; x = v * brn_5 \left(\frac{3}{5v^{3-0.3i}}\right)_{2+0.3i}, \; v^5 = 32$

branch=0, this $x_k$ when $\# = 0$ for $v^t, t \in C$

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| $x_{0\#0} = 2 * (1.0724011197586483 + 0.016706022581303267i) = 2.1448022395172965 + 0.033412045162606534i$ |
| $x_{1\#0} = (0.6180339887498949 + 1.902113032590307i) * (0.9536837812869029 + 0.021377018883085 47i) = 0.548747485139381 + 1.8272260736037171i$ |
| $x_{2\#0} = (-1.6180339887498947 + 1.1755705045849465i) * (1.0179710881327098 - 0.030764202221180217i) = -1.6109463314351329 + 1.2464743105597014i$ |
| $x_{3\#0} = (-1.618033988749895 - 1.175570504584946i) * (1.0025321580148039 + 0.023911168054537024i) = -1.5940218425876456 - 1.2172363174830494i$ |
| $x_{4\#0} = (0.6180339887498945 - 1.9021130325903073i) * (0.9887856905697382 - 0.012326875986617 24i) = 0.5876560528963651 - 1.8884005768063403i$ |

$x^7 = 16x^3 + 2, \qquad x_a = v * brn_3 \left(\frac{v^4}{48}\right)_7, \qquad v^3 = -\frac{1}{8}, \qquad x_b = v * brn_4 \left(\frac{1}{2v^7}\right)_{-3}, \qquad v^4 = 16$

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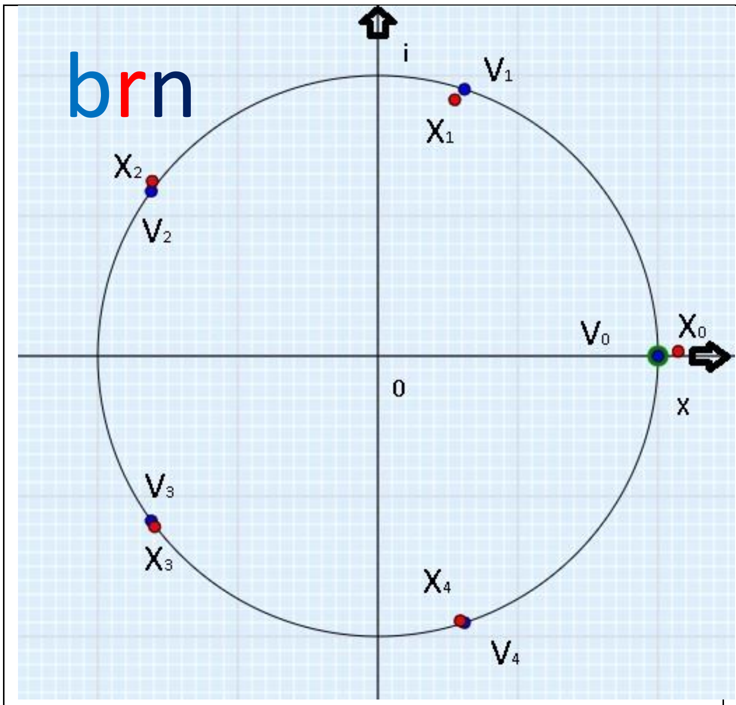
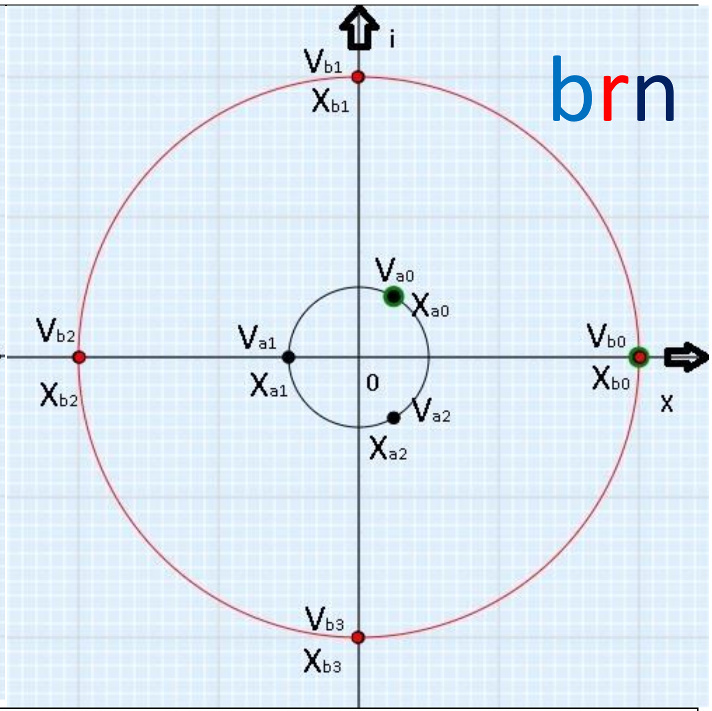
| $x_{a0} = (0.25 + 0.4330127018922193i) * (0.9993439831950751 - 0.0011188288017393983i) = 0.25032046288116483 + 0.43244893108259724i$ |
| $x_{a1} = -0.5 * 1.0013123691628107 = -0.5006561845814054$ |
| $x_{a2} = (0.25 - 0.4330127018922195i) * (0.9993439831950751 + 0.0011188288017394004i) = 0.25032046288116444 - 0.43244893108259747i$ |
| $x_{b0} = 2 * 1.0038394314588936 = 2.0076788629177873$ |
| $x_{b1} = 2i * (1.0000686010504813 + 0.003904344988661714i) = -0.007808689977323305 + 2.0001372021009627i$ |
| $x_{b2} - 2 * 0.9960231120720321 = -1.9920462241440642$ |
| $x_{b3} = -2i * (1.0000686010504813 - 0.003904344988661714i) = -0.007808689977323795 - 2.0001372021009627i$ |

$$brn_B(R)_N = \sum_{g=0}^{\dots} \frac{R^g}{g!} \prod_r^{[1;g)} (-Br + 1 + Ng)$$
$$= 1 + R + R\frac{(1-B+2N)R}{2} + R\frac{(1-B+3N)R}{2}\frac{(1-2B+3N)R}{3} + R\frac{(1-B+4N)R}{2}\frac{(1-2B+4N)R}{3}\frac{(1-3B+4N)R}{4} + \cdots$$

Gruzdov A.V.
Berezin S.V.
Berezin A.V.
Berezin P.V.
Ufa, Russia.
2022.06.10.

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|---|---|
| $x^5 = 3x^{2+0.3i} + 32, \quad v^5 = 32, w = 0$ | $x^7 = 16x^3 + 2, \quad v_a^3 = -\frac{2}{16}, v_b^4 = 16$ |

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| $L_{xv} = \sqrt{(X_x - X_v)^2 + (i_x - i_v)^2}$ | a: $brn \to 1$, when $p \to \pm\infty$ |
| $L_{xv} = L_{max}$ when $\lvert q^t m^m \rvert = \lvert t^t n^n p^m \rvert$ | b: $brn \to 1$, when $q \to 0$ |
| $L_{xv} \to 0, x \to v$ when $brn \to 1$ | c: $brn \to 1$, when $p \to 0$ |

power series $\frac{p}{2} + \sqrt[2№k]{\frac{p^2}{4} + q}$ = power series $\sqrt[2№k]{q} * brn_2\left(\frac{p}{2\sqrt[2№k]{q}}\right)_1$

$\boldsymbol{x^3 = px + q}$, $x_{k,g} = \sqrt[3№k]{A_g} + \frac{p}{3\sqrt[3№k]{A_g}}, A_g = \sqrt[2№g]{\left(\frac{q}{2}\right)^2 - \left(\frac{p}{3}\right)^3} + \frac{q}{2}$

power series $\sqrt[3№k]{A_g} + \frac{p}{3\sqrt[3№k]{A_g}}$ = power series $\sqrt[3№k]{q} * brn_3\left(\frac{p}{3\sqrt[3№k]{q}^2}\right)_1$

$\boldsymbol{x^4 = px + q = 0}$, $x_k = \sqrt[4№k]{A} + \frac{p}{4\sqrt[4№k]{B}^2} - \frac{p^2}{32\sqrt[4№k]{AB}}$ , $B^3 + B^2 q - 4P = 0$ , $A - \sqrt[4№k]{A}^2\sqrt[4№k]{B}^2 + P/4B^2 = 0$

power series $\sqrt[4№k]{A} + \frac{p}{4\sqrt[4№k]{B}^2} - \frac{p^2}{32\sqrt[4№k]{AB}}$ = power series $\sqrt[4№k]{q} * brn_4\left(\frac{p}{4\sqrt[4№k]{q}^3}\right)_1$

$\sqrt[m№k]{a + bi} = \sqrt[m]{\sqrt{a^2 + b^2}}\left(\cos\left(\frac{\varphi + 2\pi k}{m}\right) + i * \sin\left(\frac{\varphi + 2\pi k}{m}\right)\right)$

| | | |
|---|---|---|
| $a = 0$ | $b = 0$ | $\varphi = 0$ |
| | $b > 0$ | $\varphi = \pi/2$ |
| | $b < 0$ | $\varphi = 3\pi/2$ |
| $a > 0$ | $b \geq 0$ | $\varphi = atg(b/a)$ |
| | $b < 0$ | $\varphi = atg(b/a) + 2\pi$ |
| $a < 0$ | | $\varphi = atg(b/a) + \pi$ |

$(a + bi)^{(c+di)\#w} = e^{(c+di)(\ln|a+bi| + \varphi i + 2\pi w i)}$

# - reference to the nation of roots

№ - link to root


Gruzdov A.V.
Berezin S.V.
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Berezin P.V.
Ufa, Russia.

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