**********9-CAGE-3**********

Edges of 9-CAGE-3:

```
( 18  39) ( 53  54) ( 25  49) ( 13  37) ( 37  38) ( 29  30)
(  7   8) (  2   3) ( 47  48) ( 49  50) ( 48  49) ( 41  42)
(  1   9) ( 35  45) ( 45  46) ( 27  28) (  9  10) (  7  46)
( 24  25) ( 34  35) ( 32  33) (  8  27) ( 26  40) ( 51  52)
( 34  51) ( 18  19) ( 12  48) ( 30  31) ( 21  22) ( 28  29)
( 19  20) ( 15  54) ( 11  32) ( 26  27) (  3   4) ( 22  23)
(  3  43) ( 46  47) ( 39  40) ( 56  57) ( 25  26) ( 15  16)
( 14  28) (  8   9) ( 50  51) ( 36  58) (  5  38) ( 14  15)
( 35  36) ( 19  47) ( 12  13) ( 31  42) (  5   6) ( 17  33)
( 10  22) ( 23  24) ( 11  12) ( 30  57) ( 40  41) (  6  55)
( 21  52) ( 57  58) ( 31  32) ( 36  37) ( 41  53) ( 17  18)
( 55  56) ( 42  43) ( 24  56) ( 23  44) ( 38  39) ( 20  29)
(  1   2) ( 16  17) (  6   7) ( 52  53) ( 43  44) ( 10  11)
( 44  45) (  4  50) ( 54  55) (  2  16) ( 13  14) ( 33  34)
(  4   5) ( 58   1) ( 20  21)
```

Chromatic polynomial relative the tree basis:

$$
\begin{aligned}
P(9-CAGE-3,x) = {} & \\
& +1x*(x-1)^{57} \\
& -30x*(x-1)^{56} \\
& +465x*(x-1)^{55} \\
& -4960x*(x-1)^{54} \\
& +40920x*(x-1)^{53} \\
& -278256x*(x-1)^{52} \\
& +1623160x*(x-1)^{51} \\
& -8347680x*(x-1)^{50} \\
& +38607920x*(x-1)^{49} \\
& -163008550x*(x-1)^{48} \\
& +635696136x*(x-1)^{47} \\
& -2311261589x*(x-1)^{46} \\
& +7894082590x*(x-1)^{45} \\
& -25486831893x*(x-1)^{44} \\
& +78188152662x*(x-1)^{43} \\
& -228905918794x*(x-1)^{42} \\
& +641862046071x*(x-1)^{41} \\
& -1729102810236x*(x-1)^{40} \\
& +4486498644288x*(x-1)^{39} \\
& -11236549220823x*(x-1)^{38} \\
& +27212616903958x*(x-1)^{37} \\
& -63819625356207x*(x-1)^{36} \\
& +145109638599422x*(x-1)^{35} \\
& -320181993145794x*(x-1)^{34} \\
& +686049722338632x*(x-1)^{33} \\
& -1428164588188664x*(x-1)^{32} \\
& +2889237780829248x*(x-1)^{31} \\
& -5680753190524054x*(x-1)^{30} \\
& +10854289592592700x*(x-1)^{29} \\
& -20148692029750504x*(x-1)^{28} \\
& +36319683614101006x*(x-1)^{27} \\
& -63534416896992074x*(x-1)^{26} \\
& +107768197573649421x*(x-1)^{25} \\
& -177071017800627614x*(x-1)^{24} \\
& +281484231704304921x*(x-1)^{23} \\
& -432307433028742256x*(x-1)^{22} \\
& +640391961290516047x*(x-1)^{21} \\
& -913242830268416726x*(x-1)^{20} \\
& +1251019498283751815x*(x-1)^{19} \\
& -1642066942372543527x*(x-1)^{18} \\
& +2059298171626521503x*(x-1)^{17} \\
& -2459332094397203338x*(x-1)^{16} \\
& +2786347768882640489x*(x-1)^{15} \\
& -2981707625332959583x*(x-1)^{14} \\
& +2998362858117431173x*(x-1)^{13} \\
& -2816341701589962016x*(x-1)^{12} \\
& +2453464612720460048x*(x-1)^{11} \\
& -1965464273637422437x*(x-1)^{10} \\
& +1432972821003828180x*(x-1)^{9} \\
& -938682632211595477x*(x-1)^{8} \\
& +543539897016377017x*(x-1)^{7} \\
& -272347417983583282x*(x-1)^{6} \\
& +114706953790665919x*(x-1)^{5} \\
& -38944359556436932x*(x-1)^{4} \\
& +9979144393972836x*(x-1)^{3} \\
& -1712698600723100x*(x-1)^{2} \\
& +147363143477848x*(x-1)^{1}
\end{aligned}
$$

Chromatic polynomial relative the standard basis:

$$
\begin{aligned}
P(9-Cage-3,x) = &-29460820555263712792x \\
&+415750228233169660912x^2 \\
&-2953088160350429912256x^3 \\
&+1409037340033103230879 1x^4 \\
&-508393220527976261432 74x^5 \\
&+148014681466299031647423x^6 \\
&-362278082190597821505139x^7 \\
&+766728484889154422996026x^8 \\
&-143213200851787199890075 6x^9 \\
&+239754627184764947305449 1x^{10} \\
&-364075619382431410645379 8x^{11} \\
&+506257296780514236922442 5x^{12} \\
&-649546376907549415894574 3x^{13} \\
&+773727828278732660574889 0x^{14} \\
&-859989323982782805113866 9x^{15} \\
&+895603551639363074622034 9x^{16} \\
&-876845022204503770695125 8x^{17} \\
&+809302261490106646675353 3x^{18} \\
&-705747371729825603390000 4x^{19} \\
&+582526032627050804259895 9x^{20} \\
&-455743627901529640249261 9x^{21} \\
&+338324743055398589656915 9x^{22} \\
&-238505752951786488941873 4x^{23} \\
&+159753495948075283658333 2x^{24} \\
&-101701073360083731532258 4x^{25} \\
&+615424016425478572810540x^{26} \\
&-353971352721020169461696x^{27} \\
&+193466120436908876993670x^{28} \\
&-100442005703119412443006x^{29} \\
&+495068795491776528037 40x^{30} \\
&-231504361351401555494 08x^{31} \\
&+102621517796717875217 00x^{32} \\
&-430807781617596194016 9x^{33} \\
&+171084651412255877441 5x^{34} \\
&-641905136785963698619x^{35} \\
&+227217482791771950401x^{36} \\
&-75757467985074891301x^{37} \\
&+23748645012181193655x^{38} \\
&-69856049475694365 87x^{39} \\
&+19236939250510613 67x^{40} \\
&-4946829761753956 96x^{41} \\
&+1184478332408790 96x^{42} \\
&-2632206285852059 7x^{43} \\
&+5408677871478684x^{44} \\
&-1023266630245128x^{45} \\
&+177366472383910x^{46} \\
&-28005249133591x^{47} \\
&+4000750730046x^{48} \\
&-512916792680x^{49} \\
&+58433559470x^{50} \\
&-5843355957x^{51} \\
&+504981379x^{52} \\
&-36949857x^{53} \\
&+2225895x^{54} \\
&-105995x^{55} \\
&+3741x^{56} \\
&-87x^{57} \\
&+1x^{58}
\end{aligned}
$$

Roots of the chromatic polynomial of 9-CAGE-3:

$x- > 0.$
$x- > 1.$
$x- > 2.$
$x- > 2.68249$
$x- > -0.66528 - 1.15042I$
$x- > -0.66528 + 1.15042I$
$x- > -0.413358 - 1.39176I$
$x- > -0.413358 + 1.39176I$
$x- > -0.179076 - 1.53738I$
$x- > -0.179076 + 1.53738I$
$x- > 0.037977 - 1.6463I$
$x- > 0.0379779 + 1.6463I$
$x- > 0.245435 - 1.73537I$
$x- > 0.245435 + 1.73537I$
$x- > 0.447084 - 1.81209I$
$x- > 0.447084 + 1.81209I$
$x- > 0.64437 - 1.86991I$
$x- > 0.64437 + 1.86991I$
$x- > 0.829516 - 1.89323I$
$x- > 0.829516 + 1.89323I$
$x- > 1.00091 - 1.88511I$
$x- > 1.00091 + 1.88511I$
$x- > 1.15993 - 1.8522I$
$x- > 1.15993 + 1.8522I$
$x- > 1.32077 - 1.80532I$
$x- > 1.32077 + 1.80532I$
$x- > 1.47609 - 1.74936I$
$x- > 1.47609 + 1.74936I$
$x- > 1.62979 - 1.68531I$
$x- > 1.62979 + 1.68531I$
$x- > 1.78165 - 1.61304I$
$x- > 1.78165 + 1.61304I$
$x- > 1.92732 - 1.53I$
$x- > 1.92732 + 1.53I$
$x- > 2.05777 - 1.44755I$
$x- > 2.05777 + 1.44755I$
$x- > 2.1693 - 1.36399I$
$x- > 2.1693 + 1.36399I$
$x- > 2.25683 - 1.27129I$
$x- > 2.25683 + 1.27129I$
$x- > 2.32541 - 1.16162I$
$x- > 2.32541 + 1.16162I$
$x- > 2.39232 - 1.03605I$
$x- > 2.39232 + 1.03605I$
$x- > 2.46048 - 0.901I$
$x- > 2.46048 + 0.901I$
$x- > 2.52384 - 0.760177I$
$x- > 2.52384 + 0.760177I$
$x- > 2.58104 - 0.622721I$
$x- > 2.58104 + 0.622721I$
$x- > 2.6306 - 0.493005I$
$x- > 2.6306 + 0.493005I$
$x- > 2.66109 - 0.369371I$
$x- > 2.66109 + 0.369371I$
$x- > 2.67559 - 0.244758I$
$x- > 2.67559 + 0.244758I$
$x- > 2.68135 - 0.121638I$
$x- > 2.68135 + 0.121638I$