**********9-CAGE 1**********

Edges of 9-CAGE-1:

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

$$
\begin{aligned}
P(9-CAGE-1,x) = \\
&+1x*(x-1)^{57} \\
&-30x*(x-1)^{56} \\
&+465x*(x-1)^{55} \\
&-4960x*(x-1)^{54} \\
&+40920x*(x-1)^{53} \\
&-278256x*(x-1)^{52} \\
&+1623160x*(x-1)^{51} \\
&-8347680x*(x-1)^{50} \\
&+38607940x*(x-1)^{49} \\
&-163009114x*(x-1)^{48} \\
&+635704338x*(x-1)^{47} \\
&-2311343570x*(x-1)^{46} \\
&+7894715772x*(x-1)^{45} \\
&-25490859436x*(x-1)^{44} \\
&+78210109600x*(x-1)^{43} \\
&-229011336898x*(x-1)^{42} \\
&+642316567646x*(x-1)^{41} \\
&-1730888626672x*(x-1)^{40} \\
&+4492964832939x*(x-1)^{39} \\
&-11258317916100x*(x-1)^{38} \\
&+27281238601767x*(x-1)^{37} \\
&-64023340070336x*(x-1)^{36} \\
&+145681836407752x*(x-1)^{35} \\
&-321708509316816x*(x-1)^{34} \\
&+689930000628175x*(x-1)^{33} \\
&-1437587013398080x*(x-1)^{32} \\
&+2911142038352939x*(x-1)^{31} \\
&-5729586053745849x*(x-1)^{30} \\
&+10958836402985471x*(x-1)^{29} \\
&-20363862208836893x*(x-1)^{28} \\
&+36745728086330873x*(x-1)^{27} \\
&-64346379144770859x*(x-1)^{26} \\
&+109257942840874085x*(x-1)^{25} \\
&-179702203985568898x*(x-1)^{24} \\
&+285956223889705099x*(x-1)^{23} \\
&-439616809361216164x*(x-1)^{22} \\
&+651870206934645785x*(x-1)^{21} \\
&-930538170686637724x*(x-1)^{20} \\
&+1275984278186844099x*(x-1)^{19} \\
&-1676516750320103162x*(x-1)^{18} \\
&+2104632947592525109x*(x-1)^{17} \\
&-2516056884489696625x*(x-1)^{16} \\
&+2853595576466549244x*(x-1)^{15} \\
&-3056927304134496699x*(x-1)^{14} \\
&+3077354997099497118x*(x-1)^{13} \\
&-2893767429530859136x*(x-1)^{12} \\
&+2523803004509361661x*(x-1)^{11} \\
&-2024191530357460278x*(x-1)^{10} \\
&+1477574817870747853x*(x-1)^{9} \\
&-969104256634098058x*(x-1)^{8} \\
&+561874364580153217x*(x-1)^{7} \\
&-281905562108231353x*(x-1)^{6} \\
&+118893920610966789x*(x-1)^{5} \\
&-40422292357652244x*(x-1)^{4} \\
&+10372717389744614x*(x-1)^{3} \\
&-1782863245147067x*(x-1)^{2} \\
&+153630035904526x*(x-1)^{1}
\end{aligned}
$$

Chromatic polynomial relative the standard basis:

$$
\begin{aligned}
P(9-Cage-1,x) = {} & \\
& -3020561689934605791 4x \\
& +4257557240177685293 11x^{2} \\
& -3020593467522371994425x^{3} \\
& +14395591283462992232978x^{4} \\
& -5188014678165947879278 5x^{5} \\
& +1508702955393373053916 71x^{6} \\
& -3688427630351077350259 94x^{7} \\
& +7797289411864103902167 31x^{8} \\
& -1454757726254116991499 355x^{9} \\
& +2432671449948569466086 377x^{10} \\
& -3689956581898676506924 188x^{11} \\
& +5125310254127057154102 327x^{12} \\
& -6568805958262354521229 353x^{13} \\
& +7816327513830317800860 696x^{14} \\
& -8678800636264460963405 861x^{15} \\
& +9029248606052727072751 927x^{16} \\
& -8831774777833728909267 286x^{17} \\
& +8144199155224410874559 144x^{18} \\
& -7096187995864117973181 957x^{19} \\
& +5852712330598192456585 177x^{20} \\
& -4575701302310189502373 259x^{21} \\
& +3394658030309700333025 445x^{22} \\
& -2391753442457877660074 474x^{23} \\
& +1601226246584792646453 385x^{24} \\
& -1018922153261611999949 368x^{25} \\
& +6163533731657096944653 59x^{26} \\
& -3543953779800878384198 64x^{27} \\
& +1936475112294755808679 78x^{28} \\
& -1005146796538995115557 80x^{29} \\
& +4953411270520601537687 2x^{30} \\
& -2315996566086964103980 6x^{31} \\
& +1026525970077701403479 9x^{32} \\
& -4309020410546257745767x^{33} \\
& +1711111674489963800439x^{34} \\
& -6419741152136434352 42x^{35} \\
& +2272340184154376829 74x^{36} \\
& -7576110599086924304 7x^{37} \\
& +2374937610941174825 3x^{38} \\
& -6985738398666788982x^{39} \\
& +1923715904244211472x^{40} \\
& -4946862163221615 73x^{41} \\
& +1184482566235229 83x^{42} \\
& -2632211130157690 4x^{43} \\
& +5408682650334780x^{44} \\
& -1023267028492426x^{45} \\
& +177366499647044x^{46} \\
& -28005250605738x^{47} \\
& +4000750788840x^{48} \\
& -512916794224x^{49} \\
& +58433559490x^{50} \\
& -5843355957x^{51} \\
& +504981379x^{52} \\
& -36949857x^{53} \\
& +2225895x^{54} \\
& -105995x^{55} \\
& +3741x^{56} \\
& -87x^{57} \\
& +1x^{58}
\end{aligned}
$$

Roots of the chromatic polynomial of 9-CAGE-1:

$x- > 0.$
$x- > 1.$
$x- > 2.$
$x- > 2.68299$
$x- > -0.672701 - 1.15276I$
$x- > -0.672701 + 1.15276I$
$x- > -0.411865 - 1.38667I$
$x- > -0.411865 + 1.38667I$
$x- > -0.179391 - 1.53646I$
$x- > -0.179391 + 1.53646I$
$x- > 0.0379332 - 1.64667I$
$x- > 0.0379332 + 1.64667I$
$x- > 0.245664 - 1.73735I$
$x- > 0.245664 + 1.73735I$
$x- > 0.44756 - 1.81649I$
$x- > 0.44756 + 1.81649I$
$x- > 0.644313 - 1.87882I$
$x- > 0.644313 + 1.87882I$
$x- > 0.822396 - 1.89475I$
$x- > 0.822396 + 1.89475I$
$x- > 0.99208 - 1.87827I$
$x- > 0.99208 + 1.87827I$
$x- > 1.15921 - 1.84534I$
$x- > 1.15921 + 1.84534I$
$x- > 1.32197 - 1.80163I$
$x- > 1.32197 + 1.80163I$
$x- > 1.48213 - 1.75015I$
$x- > 1.48213 + 1.75015I$
$x- > 1.63885 - 1.69023I$
$x- > 1.63885 + 1.69023I$
$x- > 1.79015 - 1.61988I$
$x- > 1.79015 + 1.61988I$
$x- > 1.92832 - 1.54049I$
$x- > 1.92832 + 1.54049I$
$x- > 2.05034 - 1.45869I$
$x- > 2.05034 + 1.45869I$
$x- > 2.15265 - 1.36863I$
$x- > 2.15265 + 1.36863I$
$x- > 2.24255 - 1.26394I$
$x- > 2.24255 + 1.26394I$
$x- > 2.32605 - 1.14966I$
$x- > 2.32605 + 1.14966I$
$x- > 2.40312 - 1.02578I$
$x- > 2.40312 + 1.02578I$
$x- > 2.47389 - 0.896547I$
$x- > 2.47389 + 0.896547I$
$x- > 2.53643 - 0.765029I$
$x- > 2.53643 + 0.765029I$
$x- > 2.58849 - 0.633192I$
$x- > 2.58849 + 0.633192I$
$x- > 2.62877 - 0.503084I$
$x- > 2.62877 + 0.503084I$
$x- > 2.65627 - 0.374393I$
$x- > 2.65627 + 0.374393I$
$x- > 2.67261 - 0.247063I$
$x- > 2.67261 + 0.247063I$
$x- > 2.68069 - 0.122377I$
$x- > 2.68069 + 0.122377I$