Generating functions for homeomorphically irreducible general graphs (or general graphs without nodes of degree 2) on n labeled nodes, n=1,…,10

$$-\frac{x^2-x+1}{x-1}$$

$$\frac{2x^5-4x^4+4x^3-4x^2+2x-1}{(x-1)^3}$$

$$-\frac{8x^9-36x^8+66x^7-70x^6+51x^5-24x^4+8x^3-6x^2+3x-1}{(x-1)^6}$$

$$(4x^{15}+5x^{14}-194x^{13}+881x^{12}-2058x^{11}+3096x^{10}-3330x^9+2628x^8-1398x^7 \\ +359x^6+72x^5-93x^4+28x^3+4x^2-4x+1)\big/(x-1)^{10}$$

$$-(5x^{22}-20x^{21}+23x^{20}-815x^{19}+8110x^{18}-37255x^{17}+104890x^{16}-204469x^{15} \\ +296720x^{14}-337455x^{13}+310150x^{12}-229885x^{11}+131054x^{10}-50485x^9 \\ +6490x^8+7255x^7-6730x^6+3242x^5-995x^4+180x^3-5x^2-5x+1)\big/ \\ (x-1)^{15}$$

$$(6x^{30}-30x^{29}-90x^{28}+898x^{27}-5703x^{26}+67854x^{25}-552925x^{24}+2795730x^{23} \\ -9663357x^{22}+24476292x^{21}-47540991x^{20}+73129860x^{19}-91373250x^{18} \\ +94675608x^{17}-82549758x^{16}+60794764x^{15}-37293240x^{14}+18277860x^{13} \\ -6426742x^{12}+945252x^{11}+680499x^{10}-726250x^9+423825x^8-187536x^7 \\ +66981x^6-19092x^5+4065x^4-560x^3+24x^2+6x-1)\big/(x-1)^{21}$$

$$-(7x^{39}-42x^{38}-147x^{37}+742x^{36}+9748x^{35}-74242x^{34}+283192x^{33}-2731302x^{32}$$
$$+29773506x^{31}-204801408x^{30}+959570220x^{29}-3322464315x^{28}$$
$$+8948353890x^{27}-19376739760x^{26}+34514141410x^{25}-51438198070x^{24}$$
$$+65020224430x^{23}-70497386890x^{22}+66145611535x^{21}-53981389665x^{20}$$
$$+38268781215x^{19}-23294839890x^{18}+11827275005x^{17}-4680235280x^{16}$$
$$+1154180447x^{15}+101380102x^{14}-309334837x^{13}+208082805x^{12}-96509007x^{11}$$
$$+36056118x^{10}-11817358x^{9}+3638418x^{8}-1076232x^{7}+292012x^{6}-66675x^{5}$$
$$+11571x^{4}-1316x^{3}+56x^{2}+7x-1)\big/(x-1)^{28}$$

$$(8x^{49}-56x^{48}-224x^{47}+840x^{46}+12908x^{45}+240895x^{44}-5940260x^{43}+55081746x^{42}$$
$$-324583056x^{41}+1502540599x^{40}-6580446320x^{39}+30058523600x^{38}$$
$$-134863327080x^{37}+539183218860x^{36}-1831767249840x^{35}$$
$$+5237503269432x^{34}-12667885468784x^{33}+26149819656268x^{32}$$
$$-46486770632624x^{31}+71752913416518x^{30}-96867250101060x^{29}$$
$$+115139399155440x^{28}-121232456812320x^{27}+113683731736680x^{26}$$
$$-95336625993000x^{25}+71630493059902x^{24}-48117183563664x^{23}$$
$$+28658827636234x^{22}-14860138560260x^{21}+6460183737182x^{20}$$
$$-2148329303988x^{19}+368694775036x^{18}+144967652508x^{17}-178605026944x^{16}$$
$$+104113737316x^{15}-44190579386x^{14}+14756902412x^{13}-3942554147x^{12}$$
$$+843921680x^{11}-150337334x^{10}+27986828x^{9}-7840121x^{8}+2697404x^{7}$$
$$-788158x^{6}+172536x^{5}-26726x^{4}+2632x^{3}-104x^{2}-8x+1)\big/(x-1)^{36}$$

$$
\begin{aligned}
-(&9x^{60}-72x^{59}-324x^{58}+576x^{57}-1746x^{56}+1750896x^{55}-33519079x^{54}\\
&+305932977x^{53}-1592719191x^{52}+3662293470x^{51}+14574034485x^{50}\\
&-204831520929x^{49}+1316205741207x^{48}-6568598610972x^{47}\\
&+29128205371671x^{46}-119674976994853x^{45}+452895497402904x^{44}\\
&-1547204884753770x^{43}+4699215059868735x^{42}-12604138706828655x^{41}\\
&+29832401214158985x^{40}-62453979119716590x^{39}+116059206303747126x^{38}\\
&-192193671259773180x^{37}+284710932068616182x^{36}-378672863463681444x^{35}\\
&+453772827358977420x^{34}-491586113113082742x^{33}+483042875028435036x^{32}\\
&-431890285745070936x^{31}+352355799652295148x^{30}-262830359450878146x^{29}\\
&+179333256698755047x^{28}-111701219726541200x^{27}+63145443557746404x^{26}\\
&-32024869968842226x^{25}+14262274919219838x^{24}-5343065612626788x^{23}\\
&+1506131984889171x^{22}-173835372270231x^{21}-134979478805745x^{20}\\
&+126341696818854x^{19}-67365874126097x^{18}+27336241205127x^{17}\\
&-8926591838859x^{16}+2330220083460x^{15}-450702384363x^{14}+43709983191x^{13}\\
&+9843236520x^{12}-6533886546x^{11}+1979537166x^{10}-400175504x^{9}\\
&+50459895x^{8}-895626x^{7}-1327620x^{6}+361044x^{5}-53658x^{4}+4728x^{3}-171x^{2}\\
&-9x+1)\big/(x-1)^{45}
\end{aligned}
$$

$$
\begin{aligned}
&(10\,x^{72} - 90\,x^{71} - 450\,x^{70} - 390\,x^{69} - 135765\,x^{68} + 9561060\,x^{67} - 189876930\,x^{66} \\
&\quad + 2077390754\,x^{65} - 14731445465\,x^{64} + 71801086790\,x^{63} - 254248436610\,x^{62} \\
&\quad + 884125526670\,x^{61} - 5596423140159\,x^{60} + 46880771637060\,x^{59} \\
&\quad - 330738767945190\,x^{58} + 1882395007297950\,x^{57} - 9050323603289595\,x^{56} \\
&\quad + 38536314301278150\,x^{55} - 150438474955246170\,x^{54} + 548052808041234930\,x^{53} \\
&\quad - 1866870986897602245\,x^{52} + 5902844179934517060\,x^{51} \\
&\quad - 17163713163771115830\,x^{50} + 45566650423536140430\,x^{49} \\
&\quad - 110008163364855662445\,x^{48} + 241173483188577173010\,x^{47} \\
&\quad - 480266456551307065710\,x^{46} + 869796470864874553546\,x^{45} \\
&\quad - 1435061829371837804655\,x^{44} + 2160990983626900238940\,x^{43} \\
&\quad - 2975712078036971149380\,x^{42} + 3754057120911475840350\,x^{41} \\
&\quad - 4346979156778949091261\,x^{40} + 4628640225134106397230\,x^{39} \\
&\quad - 4540570003682621199340\,x^{38} + 4111344798117078347350\,x^{37} \\
&\quad - 3442692303540445291945\,x^{36} + 2670721942898118916716\,x^{35} \\
&\quad - 1922241139003930512390\,x^{34} + 1284621962866378756830\,x^{33} \\
&\quad - 796836089971794392835\,x^{32} + 457783772091424557450\,x^{31} \\
&\quad - 242449346412046792926\,x^{30} + 117391936554796205850\,x^{29} \\
&\quad - 51239410269563429205\,x^{28} + 19665338209079795220\,x^{27} \\
&\quad - 6303613617133953510\,x^{26} + 1455299165048774250\,x^{25} \\
&\quad - 60937478397766605\,x^{24} - 173408835867595110\,x^{23} + 125509763492348670\,x^{22} \\
&\quad - 59210368241733120\,x^{21} + 22055753717553879\,x^{20} - 6759358851813750\,x^{19} \\
&\quad + 1685394978614500\,x^{18} - 314356503770310\,x^{17} + 26941109773665\,x^{16} \\
&\quad + 9734014456662\,x^{15} - 6411816973530\,x^{14} + 2307260942730\,x^{13} \\
&\quad - 639550966815\,x^{12} + 146258551350\,x^{11} - 27880865622\,x^{10} + 4336291220\,x^{9} \\
&\quad - 515629305\,x^{8} + 37931040\,x^{7} + 547470\,x^{6} - 633834\,x^{5} + 97290\,x^{4} - 7860\,x^{3} \\
&\quad + 260\,x^{2} + 10\,x - 1)\,\big/\,(x-1)^{55}
\end{aligned}
$$