Nevezetes azonosságok

1. Végezd el a zárójel felbontásokat a nevezetes azonosságok segítségével!

a) $(3h+6)^2$

b) $(10x+10)^2$

g) $(6j+4)^2$

h) $(3b+12)^2$

m) $(10d+6)^2$

n) $(9f+12)^2$

s) $(3e-4)^2$

t) $(6e-10)^2$

2. Végezd el a zárójel felbontásokat a nevezetes azonosságok segítségével!

a) $\left(4y^6+6v^5\right)^2$

b) $\left(7b^4-5w^2\right)^2$

e) $\left(2z^4-3u^6\right)^2$

f) $\left(11w^6+6j^{11}\right)^2$

i) $\left(2e^7+4j^2\right)^2$

j) $\left(5k^2+11y^9\right)^2$

m) $\left(12a^6-7g^2\right)^2$

n) $\left(8e^4+5v^5\right)^2$

o) $\left(3b^6-3g^{12}\right)^2$ $9b^{12}-18b^6g^{12}+9g^{24}$

p) $\left(10f^3+3g^9\right)^2$ $100f^6+60f^3g^9+9g^{18}$

q) $\left(6v^4-12e^7\right)^2$ $36v^8-144v^4e^7+144e^{14}$

r) $\left(2e^{10}+12y^9\right)^2$ $4e^{20}+48e^{10}y^9+144y^{18}$

s) $\left(6k^{12}+2h^4\right)^2$ $36k^{24}+24k^{12}h^4+4h^8$

t) $\left(8j^{10}+10y^4\right)^2$ $64j^{20}+160j^{10}y^4+100y^8$

3. Végezd el a zárójel felbontásokat a nevezetes azonosságok segítségével!

a) $\left(6h^{10}-3a^7\right)\left(6h^{10}+3a^7\right)$ $36h^{20}-9a^{14}$

b) $\left(4z^4-4x^9\right)\left(4z^4+4x^9\right)$ $16z^8-16x^{18}$

c) $\left(4u^6+8h^8\right)\left(4u^6-8h^8\right)$ $16u^{12}-64h^{16}$

d) $\left(6a^4-12j^8\right)\left(6a^4+12j^8\right)$ $36a^8-144j^{16}$

e) $\left(6w^6+11e^8\right)\left(6w^6-11e^8\right)$ $36w^{12}-121e^{16}$

f) $\left(9v^5-3e^{10}\right)\left(9v^5+3e^{10}\right)$ $81v^{10}-9e^{20}$

g) $\left(6a^8+10y^4\right)\left(6a^8-10y^4\right)$ $36a^{16}-100y^8$

h) $\left(5b^9-4h^7\right)\left(5b^9+4h^7\right)$ $25b^{18}-16h^{14}$

i) $\left(8d^{12}-6z^8\right)\left(8d^{12}+6z^8\right)$ $64d^{24}-36z^{16}$

j) $\left(12k^7-5v^{11}\right)\left(12k^7+5v^{11}\right)$ $144k^{14}-25v^{22}$

k) $\left(10j^3+6z^6\right)\left(10j^3-6z^6\right)$ $100j^6-36z^{12}$

l) $\left(4j^7+2c^8\right)\left(4j^7-2c^8\right)$ $16j^{14}-4c^{16}$

m) $\left(8c^{11}-2w^8\right)\left(8c^{11}+2w^8\right)$ $64c^{22}-4w^{16}$

n) $\left(5f^4+2c^7\right)\left(5f^4-2c^7\right)$ $25f^8-4c^{14}$

o) $\left(10j^{12}-2x^5\right)\left(10j^{12}+2x^5\right)$ $100j^{24}-4x^{10}$

p) $\left(6f^{11}+3z^8\right)\left(6f^{11}-3z^8\right)$ $36f^{22}-9z^{16}$

q) $\left(4d^{12}-3u^2\right)\left(4d^{12}+3u^2\right)$ $16d^{24}-9u^4$

r) $\left(9w^{11}+12j^{10}\right)\left(9w^{11}-12j^{10}\right)$ $81w^{22}-144j^{20}$

s) $\left(3g^3-8f^2\right)\left(3g^3+8f^2\right)$ $9g^6-64f^4$

t) $\left(6d^2-6k^4\right)\left(6d^2+6k^4\right)$ $36d^4-36k^8$

4. Bontsd fel a zárójeleket!

a) $(x+1)^2$ x^2+2x+1

b) $(b-3)^2$ b^2-6b+9

c) $(2c-5)^2$ $4c^2-20c+25$

d) $(4d-3)^2$ $16d^2-24d+9$

e) $\left(\frac{1}{2}e+3\right)^2$ $\frac{1}{4}e^2+3e+9$

f) $\left(3a^2b-1\right)^2$ $9a^4b^2-6a^2b+1$

g) $(a-1)(a+1)$ a^2-1

h) $(b+3)(b-3)$ b^2-9

i) $(2c-5)(2c+5)$ $4c^2-25$

j) $(3d-5c)(3d+5c)$ $9d^2-25c^2$

k) $\left(3f^2-2\right)\left(3f^2+2\right)$ $9f^4-4$

l) $(4ij+3k)(4ij-3k)$ $16i^2j^2-9k^2$

m) $\left(3x^2y+2\right)\left(3x^2y-2\right)$ $9x^4y^2-4$

n) $(5xy+z)^2$ $25x^2y^2+10xyz+z^2$

o) $\left(6x^2-7yz\right)^2$ $36x^4-84x^2yz+49y^2z^2$

5. Bontsuk fel a zárójeleket!

a) $(a+1)^2$ $\boxed{a^2+2a+1}$

b) $(4d-3)^2$ $\boxed{16d^2-24d+9}$

c) $\left(\frac{1}{2}e-3\right)^2$ $\boxed{\frac{e^2}{4}-3e+9}$

d) $\left(\frac{3}{4}x^3y-\frac{2}{3}z^3\right)^2$ $\boxed{\frac{9}{16}x^6y^2-x^3yz^3+\frac{4}{9}z^6}$

e) $\left(\frac{2}{3}b^3-\frac{3}{4}\frac{c^2}{d}\right)^2$ $\boxed{\frac{4}{9}b^6-\frac{b^3c^2}{d}+\frac{9}{16}\frac{c^4}{d^2}}$

f) $\left(\frac{d^3}{3}+5c\right)\left(\frac{d^3}{3}-5c\right)$ $\boxed{\frac{d^6}{9}-25c^2}$

g) $\left(3a^2b-1\right)^2$ $\boxed{9a^4b^2-6a^2b+1}$

h) $(b+3)(b-3)$ $\boxed{b^2-9}$

i) $\left(4ab^5-3a^3b\right)^2$ $\boxed{16a^2b^{10}-24a^4b^6+9a^6b^2}$

j) $(2c-5)(2c+5)$ $\boxed{4c^2-25}$

k) $\left(3f^4-2\right)\left(3f^4+2\right)$ $\boxed{9f^8-4}$

l) $\left(4i^5j^6+3k^7\right)\left(4i^5j^6-3k^7\right)$ $\boxed{16i^{10}j^{12}-9k^{14}}$

m) $\left(5r^2-3r\right)\left(5r^2+3r\right)$ $\boxed{25r^4-9r^2}$

n) $\left(3x^2y+2\right)\left(3x^2y-2\right)$ $\boxed{9x^4y^2-4}$

6. Bontsd fel a zárójeleket!

a) $\left(2k^7-2f^5\right)^3$ $\boxed{8k^{21}-24k^{14}f^5+24k^7f^{10}-8f^{15}}$

b) $\left(9b^7+5y^8\right)^3$ $\boxed{729b^{21}+1215b^{14}y^8+675b^7y^{16}+125y^{24}}$

c) $\left(5y^4+5u^8\right)^3$ $\boxed{125y^{12}+375y^8u^8+375y^4u^{16}+125u^{24}}$

d) $\left(8k^{11}-6d^{10}\right)^3$ $\boxed{512k^{33}-1152k^{22}d^{10}+864k^{11}d^{20}-216d^{30}}$

e) $\left(10v^6+5f^{11}\right)^3$ $\boxed{1000v^{18}+1500v^{12}f^{11}+750v^6f^{22}+125f^{33}}$

f) $\left(2b^{12}+5y^8\right)^3$ $\boxed{8b^{36}+60b^{24}y^8+150b^{12}y^{16}+125y^{24}}$

g) $\left(10z^5-3x^7\right)^3$ $\boxed{1000z^{15}-900z^{10}x^7+270z^5x^{14}-27x^{21}}$

h) $\left(3g^4+6e^{10}\right)^3$ $\boxed{27g^{12}+162g^8e^{10}+324g^4e^{20}+216e^{30}}$

i) $\left(9u^7-6h^9\right)^3$ $\boxed{729u^{21}-1458u^{14}h^9+972u^7h^{18}-216h^{27}}$

j) $\left(5h^{12}+3y^{11}\right)^3$ $\boxed{125h^{36}+225h^{24}y^{11}+135h^{12}y^{22}+27y^{33}}$

k) $\left(4u^7+3j^6\right)^3$ $\boxed{64u^{21}+144u^{14}j^6+108u^7j^{12}+27j^{18}}$

l) $\left(8j^5+3x^7\right)^3$ $\boxed{512j^{15}+576j^{10}x^7+216j^5x^{14}+27x^{21}}$

m) $\left(4j^3+5f^3\right)^3$ $\boxed{64j^9+240j^6f^3+300j^3f^6+125f^9}$

n) $\left(12w^2+6g^5\right)^3$ $\boxed{1728w^6+2592w^4g^5+1296w^2g^{10}+216g^{15}}$

o) $\left(5b^8+5e^9\right)^3$ $\boxed{125b^{24}+375b^{16}e^9+375b^8e^{18}+125e^{27}}$

p) $\left(6e^3-2c^8\right)^3$ $\boxed{216e^9-216e^6c^8+72e^3c^{16}-8c^{24}}$

q) $\left(6k^6+5b^5\right)^3$ $\boxed{216k^{18}+540k^{12}b^5+450k^6b^{10}+125b^{15}}$

r) $\left(2k^4+4f^5\right)^3$ $\boxed{8k^{12}+48k^8f^5+96k^4f^{10}+64f^{15}}$

s) $\left(11y^5-4g^3\right)^3$ $\boxed{1331y^{15}-1452y^{10}g^3+528y^5g^6-64g^9}$

t) $\left(12y^2-4u^{12}\right)^3$ $\boxed{1728y^6-1728y^4u^{12}+576y^2u^{24}-64u^{36}}$

u) $\left(3e^5+5c^2\right)^3$ $\boxed{27e^{15}+135e^{10}c^2+225e^5c^4+125c^6}$

v) $\left(4z^8-6b^9\right)^3$ $\boxed{64z^{24}-288z^{16}b^9+432z^8b^{18}-216b^{27}}$

w) $\left(4u^5+2w^9\right)^3$ $\boxed{64u^{15}+96u^{10}w^9+48u^5w^{18}+8w^{27}}$

x) $\left(10x^9-4h^{11}\right)^3$ $\boxed{1000x^{27}-1200x^{18}h^{11}+480x^9h^{22}-64h^{33}}$

7. Bontsd fel a zárójeleket!

a) $\left(3j^{6}+3e^{8}-5h^{6}\right)^{2}$

$9j^{12}+9e^{16}+25h^{12}+18j^{6}e^{8}-30e^{8}h^{6}-30j^{6}h^{6}$

b) $\left(5w^{9}-4y^{9}+2d^{12}\right)^{2}$

$25w^{18}+16y^{18}+4d^{24}-40w^{9}y^{9}-16y^{9}d^{12}+20w^{9}d^{12}$

c) $\left(5w^{8}+3j^{8}+4a^{10}\right)^{2}$

$25w^{16}+9j^{16}+16a^{20}+30w^{8}j^{8}+24j^{8}a^{10}+40w^{8}a^{10}$

d) $\left(12z^{12}+5y^{7}+6h^{11}\right)^{2}$

$144z^{24}+25y^{14}+36h^{22}+120z^{12}y^{7}+60y^{7}h^{11}+144z^{12}h^{11}$

e) $\left(9z^{3}+5b^{6}+3w^{4}\right)^{2}$

$81z^{6}+25b^{12}+9w^{8}+90z^{3}b^{6}+30b^{6}w^{4}+54z^{3}w^{4}$

f) $\left(10a^{6}-2h^{2}+6e^{3}\right)^{2}$

$100a^{12}+4h^{4}+36e^{6}-40a^{6}h^{2}-24h^{2}e^{3}+120a^{6}e^{3}$

g) $\left(5h^{12}+2x^{4}+6g^{8}\right)^{2}$

$25h^{24}+4x^{8}+36g^{16}+20h^{12}x^{4}+24x^{4}g^{8}+60h^{12}g^{8}$

h) $\left(4h^{7}+6a^{11}-2f^{7}\right)^{2}$

$16h^{14}+36a^{22}+4f^{14}+48h^{7}a^{11}-24a^{11}f^{7}-16h^{7}f^{7}$

i) $\left(4w^{8}-6k^{5}+6y^{12}\right)^{2}$

$16w^{16}+36k^{10}+36y^{24}-48w^{8}k^{5}-72k^{5}y^{12}+48w^{8}y^{12}$

j) $\left(8h^{11}-5a^{9}-2d^{11}\right)^{2}$

$64h^{22}+25a^{18}+4d^{22}-80h^{11}a^{9}+20a^{9}d^{11}-32h^{11}d^{11}$

k) $\left(2d^{9}+2u^{7}-2f^{3}\right)^{2}$

$4d^{18}+4u^{14}+4f^{6}+8d^{9}u^{7}-8u^{7}f^{3}-8d^{9}f^{3}$

l) $\left(10a^{11}+5g^{10}-6w^{2}\right)^{2}$

$100a^{22}+25g^{20}+36w^{4}+100a^{11}g^{10}-60g^{10}w^{2}-120a^{11}w^{2}$

m) $\left(7k^{5}+5e^{11}+2y^{9}\right)^{2}$

$49k^{10}+25e^{22}+4y^{18}+70k^{5}e^{11}+20e^{11}y^{9}+28k^{5}y^{9}$

n) $\left(8b^{2}-3g^{7}+3u^{4}\right)^{2}$

$64b^{4}+9g^{14}+9u^{8}-48b^{2}g^{7}-18g^{7}u^{4}+48b^{2}u^{4}$

o) $\left(9h^{2}-2b^{10}+4w^{8}\right)^{2}$

$81h^{4}+4b^{20}+16w^{16}-36h^{2}b^{10}-16b^{10}w^{8}+72h^{2}w^{8}$

p) $\left(11e^{8}-2x^{2}-3k^{10}\right)^{2}$

$121e^{16}+4x^{4}+9k^{20}-44e^{8}x^{2}+12x^{2}k^{10}-66e^{8}k^{10}$

q) $\left(3f^{9}-6y^{8}+6u^{3}\right)^{2}$

$9f^{18}+36y^{16}+36u^{6}-36f^{9}y^{8}-72y^{8}u^{3}+36f^{9}u^{3}$