3. Bez "Bruchterme +/-" Lösungen Vortest

a) $\frac{6r^2-6}{(r+1)(r-1)} = \frac{6(r+1)(r-1)}{(r+1)(r-1)} = \underline{\underline{6}}$

b) $\frac{4s-4}{s^2-2s+1} = \frac{4(s-1)}{(s-1)(s-1)} = \underline{\underline{\frac{4}{(s-1)}}}$

c) $\frac{2}{u-1} + \frac{4}{u+2} + \frac{12}{u^2+u-2} = \frac{2}{(u-1)} + \frac{4}{(u+2)} + \frac{12}{(u-1)(u+2)} =$

$\frac{2(u+2)+4(u-1)+12}{(u-1)(u+2)} = \frac{2u+4+4u-4+12}{(u-1)(u+2)} = \frac{6u+12}{(u-1)(u+2)} = \frac{6(u+2)}{(u-1)(u+2)} =$

$\underline{\underline{\frac{6}{(u-1)}}}$

d) $\frac{4}{k^2-1} - \frac{4}{2k-2} + \frac{4k}{k^2+k} = \frac{4}{(k+1)(k-1)} - \frac{4}{2(k-1)} + \frac{4k}{k(k+1)} =$

$\frac{8k-4k(k+1)+8k(k-1)}{2k(k+1)(k-1)} = \frac{8k-4k^2-4k+8k^2-8k}{2k(k+1)(k-1)} = \frac{4k^2-4k}{2k(k+1)(k-1)} =$

$\frac{4k(k-1)}{2k(k+1)(k-1)} = \underline{\underline{\frac{2}{(k+1)}}}$

e) $\frac{5a}{a-3}-\frac{3a^2-11a-9}{a^2-7a+12}-\frac{2a}{a-4}=\frac{5a}{(a-3)}-\frac{3a^2-11a-9}{(a-3)(a-4)}-\frac{2a}{(a-4)}=$

$\frac{5a(a-4)-\left(3a^2-11a-9\right)-2a(a-3)}{(a-3)(a-4)}=\frac{5a^2-20a-3a^2+11a+9-2a^2+6a}{(a-3)(a-4)}=$

$\frac{-3a+9}{(a-3)(a-4)}=\frac{-3(a-3)}{(a-3)(a-4)}=\underline{\underline{\frac{-3}{(a-4)}}}$

f) $\frac{2a-5b}{4a-12b}+\frac{14a^2-43ab-8b^2}{4a^2+20ab-96b^2}-\frac{3a-4b}{a+8b}=$

$\frac{2a-5b}{4(a-3b)}+\frac{14a^2-43ab-8b^2}{4(a^2+5ab-24b^2)}-\frac{3a-4b}{(a+8b)}=$

$\frac{2a-5b}{4(a-3b)}+\frac{14a^2-43ab-8b^2}{4(a-3b)(a+8b)}-\frac{3a-4b}{(a+8b)}=$

$\frac{(2a-5b)(a+8b)+14a^2-43ab-8b^2-4(3a-4b)(a-3b)}{4(a-3b)(a+8b)}=$

$\frac{2a^2+16ab-5ab-40b^2+14a^2-43ab-8b^2-4(3a^2-9ab-4ab+12b^2)}{4(a-3b)(a+8b)}=$

$\frac{2a^2+16ab-5ab-40b^2+14a^2-43ab-8b^2-12a^2+36ab+16ab-48b^2}{4(a-3b)(a+8b)}=$

$\frac{4a^2+20ab-96b^2}{4(a-3b)(a+8b)}=\frac{4\left(a^2+5ab-24b^2\right)}{4(a-3b)(a+8b)}=\frac{4(a-3b)(a+8b)}{4(a-3b)(a+8b)}=\underline{\underline{1}}$