Les 1 Opgave 2 - Bereken en vereenvoudig. (uitwerkingen)

1. $\frac{7}{8}-\frac{3}{-32}=\frac{7}{8}--\frac{3}{32}=\frac{7}{8}+\frac{3}{32}=\frac{4}{4}*\frac{7}{8}+\frac{3}{32}=\frac{28}{32}+\frac{3}{32}=\frac{31}{32}$

2. $\left(\frac{22}{7}-\frac{15}{14}\right)*\frac{-21}{2}=\left(\left(\frac{2}{2}*\frac{22}{7}\right)-\left(\frac{15}{14}\right)\right)*-\frac{21}{2}=$
$\left(\frac{44}{14}-\frac{15}{14}\right)*-\frac{21}{2}=\frac{29}{14}*-\frac{21}{2}=-\frac{609}{28}=-\frac{87}{4}-21\frac{3}{4}$

3. $\frac{3}{8}\div-\frac{1}{4}=\frac{3}{8}*-\frac{4}{1}=-\frac{12}{8}=-\frac{3}{2}=-1\frac{1}{2}$

4. $\frac{1}{3}\div-2=\frac{1}{3}*-\frac{1}{2}=-\frac{1}{6}$

5. $\left(\frac{9}{5}+\frac{3}{4}\right)\div\left(\frac{7}{2}-\frac{5}{3}\right)=\left(\frac{36}{20}+\frac{15}{20}\right)\div\left(\frac{21}{6}-\frac{10}{6}\right)=$
$\frac{51}{20}\div\frac{11}{6}=\frac{51}{20}*\frac{6}{11}=\frac{306}{220}=\frac{153}{110}=1\frac{43}{110}$

6. $\frac{\frac{1}{3}+\frac{-1}{2}}{\frac{1}{4}-\frac{1}{3}}=\frac{\frac{2}{6}-\frac{3}{6}}{\frac{3}{12}-\frac{4}{12}}=\frac{-\frac{1}{6}}{-\frac{1}{12}}=-\frac{1}{6}*-\frac{12}{1}=\frac{12}{6}=2$

7. $\frac{11a}{7}-\frac{3a}{2}=\frac{22a}{14}-\frac{21a}{14}=\frac{a}{14}=\frac{1}{14}a=$

8. $\frac{2}{a^2b}+\frac{3}{b^2}=\frac{2b}{a^2b^2}+\frac{3a^2}{a^2b^2}=\frac{3a^2+2b}{a^2b^2}$

9. $5+\frac{x}{y}=\frac{5}{1}+\frac{x}{y}=\frac{5y}{y}+\frac{x}{y}=\frac{5y+x}{y}$

10. $\frac{2x}{1+\frac{x}{y}}=\frac{2x}{\frac{y}{y}+\frac{x}{y}}=\frac{2x}{\frac{x+y}{y}}=\frac{2x}{1}*\frac{y}{x+y}=\frac{2xy}{x+y}$

11. $\frac{x-\frac{x}{y}}{y}=\frac{\frac{xy}{y}-\frac{x}{y}}{y}=\frac{\frac{xy-x}{y}}{y}=\frac{xy-x}{y}*\frac{1}{y}=\frac{xy-x}{y^2}$

12. $\frac{a+b}{2}-\frac{a-b}{3}=\frac{3(a+b)}{6}-\frac{2(a-b)}{6}=\frac{3a+3b-2a+2b}{6}=\frac{a+5b}{6}$

13. $\frac{a+2}{2a}+\frac{1-a^2}{a^2}+\frac{1}{2}=\frac{a(a+2)}{2a^2}+\frac{2(1-a^2)}{2a^2}+\frac{a^2(1)}{2a^2}=$
$\frac{a^2+2a+2-2a^2+a^2}{2a^2}=\frac{2+2a}{2a^2}=\frac{2(1+a)}{2(a^2)}=\frac{1+a}{a^2}$

14. $\frac{x+5}{x+3}-\frac{x-3}{x-5}=\frac{(x-5)(x+5)}{(x+3)(x-5)}-\frac{(x+3)(x-3)}{(x+3)(x-5)}=$
$\frac{\left(x^2-25\right)}{x^2-2x-15}-\frac{\left(x^2-9\right)}{x^2-2x-15}=\frac{x^2-25-x^2+9}{x^2-2x-15}=\frac{-16}{x^2-2x-15}=\frac{-16}{(x+3)(x-5)}$

15. $\frac{a+b}{b}-1=\frac{a+b}{b}-\frac{b}{b}=\frac{a+b-b}{b}=\frac{a}{b}$

16. $x+y-\frac{3x-5y}{4}=\frac{4(x+y)}{4}-1*\frac{3x-5y}{4}=\frac{4x+4y}{4}-\frac{3x+5y}{4}=$
$\frac{4x-3x+4y+5y}{4}=\frac{x+9y}{4}$

17. $\frac{7-x}{x^2+2x}+\frac{3}{x}=\frac{7-x}{x^2+2x}+\frac{3*(x+2)}{x*(x+2)}=\frac{7-x}{x^2+2x}+\frac{3x+6}{x^2+2x}=$
$\frac{3x-x+6+7}{x^2+2x}=\frac{2x+13}{x^2+2x}=\frac{2x+13}{x(x+2)}$

18. $(x+y)\div\left(\frac{1}{x}+\frac{1}{y}\right)=(x+y)\div\left(\frac{y}{xy}+\frac{x}{xy}\right)=(x+y)\div\left(\frac{x+y}{xy}\right)=$
$\frac{x+y}{1}*\frac{xy}{x+y}=\frac{xy}{1}=xy$

19. $\frac{a+1+\frac{6}{a-6}}{a-2+\frac{3}{a-6}}=\frac{\left(\frac{a(a-6)}{a-6}+\frac{a-6}{a-6}+\frac{6}{a-6}\right)}{\left(\frac{a(a-6)}{a-6}-\frac{2(a-6)}{a-6)}+\frac{3}{a-6}\right)}=$
$\frac{\left(\frac{a^2-6a+a-6+6}{a-6}\right)}{\left(\frac{a^2-6a-2a+12+3}{a-6}\right)}=\frac{\left(\frac{a^2-5a}{a-6}\right)}{\left(\frac{a^2-8a+15}{a-6}\right)}=\frac{a^2-5a}{a-6}*\frac{a-6}{a^2-8a+15}=$
$\frac{a^2-5a}{a^2-8a+15}=\frac{a(a-5)}{(a-5)(a-3)}=\frac{a}{a-3}$

20. $$\frac{\frac{2a+b}{a+b}-1}{1-\frac{a}{a+b}}=\frac{\frac{2a+b}{a+b}-1*\frac{(a+b)}{a+b}}{\frac{a+b}{a+b}-\frac{a}{a+b}}=\frac{\frac{2a+b-a-b}{a+b}}{\frac{a+b-a}{a+b}}=\frac{\frac{a}{a+b}}{\frac{b}{a+b}}=$$

$$\frac{a}{a+b}*\frac{a+b}{b}=\frac{a}{b}$$