

Key

Rational Expressions

Definition: fraction in which the numerator and denominator are polynomials

Simplify the following rational expressions.

1. $\frac{12y}{48y^3} = \frac{1}{4y^2}$	2. $\frac{21ab}{35ab^2} = \frac{3}{5b}$	3. $\frac{8m^2n}{24mn^3} = \frac{m}{3n^2}$
4. $\frac{16x^3y^3}{36x^5y^2} = \frac{4y}{9x^2}$	5. $\frac{12a^2b^3}{40a^3b} = \frac{3b^2}{10a}$	6. $\frac{6xyz^3}{3x^2y^2z} = \frac{2z^2}{xy}$
7. $\frac{n+6}{3n+18} = \frac{\cancel{n+6}}{3(\cancel{n+6})} = \frac{1}{3}$	8. $\frac{4x-4}{4x+4} = \frac{\cancel{4}(x-1)}{\cancel{4}(x+1)} = \frac{x-1}{x+1}$	
9. $\frac{y^2-64}{y+8} = \frac{\cancel{(y+8)}(y-8)}{y+8} = y-8$	10. $\frac{k^2-7k-18}{k-9} = \frac{\cancel{(k-9)}(k+2)}{k-9} = k+2$	
11. $\frac{z+1}{z^2-1} = \frac{\cancel{z+1}}{\cancel{(z+1)}(z-1)} = \frac{1}{z-1}$	12. $\frac{x+6}{x^2+2x-24} = \frac{\cancel{x+6}}{\cancel{(x+6)}(x-4)} = \frac{1}{x-4}$	
13. $\frac{2d+10}{d^2-2d-35} = \frac{\cancel{2}(d+5)}{\cancel{(d+5)}(d-7)} = \frac{2}{d-7}$	14. $\frac{3h-9}{h^2-8h+15} = \frac{\cancel{3}(h-3)}{\cancel{(h-3)}(h-5)} = \frac{3}{h-5}$	

<p>15. $\frac{2r+18}{r^2+8r-9} = \frac{2(r+9)}{(r+9)(r-1)} = \frac{2}{r-1}$</p>	<p>16. $\frac{y^2+9y-10}{3y+30} = \frac{(y+10)(y-1)}{3(y+10)} = \frac{y-1}{3}$</p>
<p>17. $\frac{x^2+5x+6}{x^2+6x+8} = \frac{(x+3)(x+2)}{(x+4)(x+2)} = \frac{x+3}{x+4}$</p>	<p>18. $\frac{a^2+3a-4}{a^2+2a-8} = \frac{(a+4)(a-1)}{(a+4)(a-2)} = \frac{a-1}{a-2}$</p>
<p>19. $\frac{4m^2-20m}{m^2-4m-5} = \frac{4m(m-5)}{(m-5)(m+1)} = \frac{4m}{m+1}$</p>	<p>20. $\frac{6x^3-8x}{9x^3-12x} = \frac{2x(3x^2-4)}{3x(3x^2-4)} = \frac{2}{3}$</p>
<p>21. $\frac{8x^3+8x^2}{10x^2+10x} = \frac{8x^2(x+1)}{10x(x+1)} = \frac{4x}{5}$</p>	<p>22. $\frac{5y^2+10y-40}{10y^2-30y+20} = \frac{5(y^2+2y-8)}{2 \cdot 5(y^2-3y+2)} = \frac{(y+4)(y-2)}{2(y-2)(y-1)} = \frac{y+4}{2(y-1)}$</p>
<p>23. $\frac{4x-20}{3x^2-14x-5} = \frac{4(x-5)}{(x-5)(3x+1)} = \frac{4}{3x+1}$ $3x^2-15x+1x-5$ $3x(x-5)+1(x-5)$ $(x-5)(3x+1)$</p>	<p>24. $\frac{6w^2+5w-4}{4w^2-1} = \frac{(3w+4)(2w-1)}{(2w+1)(2w-1)} = \frac{3w+4}{2w+1}$ $6w^2+8w-3w-4$ $2w(3w+4)-1(3w+4)$ $(3w+4)(2w-1)$</p>
<p>25. $\frac{2b^2+12b+18}{3b^2-3b-36} = \frac{2(b^2+6b+9)}{3(b^2-b-12)} = \frac{2(b+3)(b+3)}{3(b-4)(b+3)} = \frac{2(b+3)}{3(b-4)}$</p>	<p>26. $\frac{2y^2+9y+4}{4y^2-4y-3} = \frac{(y+4)(2y+1)}{(2y-3)(2y+1)} = \frac{y+4}{2y-3}$ $2y^2+8y+1y+4$ $2y(y+4)+1(y+4)$ $(y+4)(2y+1)$ $4y^2-6y+2y-3$ $2y(2y-3)+1(2y-3)$ $(2y-3)(2y+1)$</p>