

Simplify. State the excluded values

$$1. \frac{32k^2}{80k} = \frac{2k}{5}$$

Excluded values: $k \neq 0$

$$2. \frac{45n}{15n^2-45n} = \frac{3}{n-3}$$

Excluded values: $n \neq 0, 3$

$$3. \frac{6r^2+42r}{r^2+r-42} = \frac{6r}{r-6}$$

Excluded values: $r \neq -7, 6$

Multiple.

$$4. \frac{8b^3}{2} \cdot \frac{8}{3} = \frac{32b^3}{3}$$

$$5. \frac{8(x+5)}{(x+7)(x+5)} \cdot \frac{x+7}{2} = \frac{4}{1} = 4$$

$$6. \frac{k+8}{4k+20} \cdot \frac{10k^2+50k}{5k} = \frac{k+8}{2}$$

Divide.

$$7. \frac{4n^2}{8} \div \frac{3n^3}{7n} = \frac{7}{6}$$

$$8. \frac{9}{x-1} \div \frac{7(x-8)}{7(1-x)} = \frac{-9}{x-8}$$

$$9. \frac{6b+48}{b+8} \div \frac{6b-24}{5b} = \frac{5b}{b-4}$$

Simplify the complex fraction.

$$10. \frac{\frac{5x}{4}}{\frac{x}{4}} = \frac{5x}{4} \cdot \frac{4}{x} = 5$$

$$11. \frac{\frac{x^2}{5}}{\frac{x^2}{15}} = \frac{x^2}{5} \cdot \frac{15}{x^2} = 3$$

$$12. \frac{\frac{x+2}{x}}{\frac{1}{x}} = \frac{x+2}{x} \cdot \frac{x}{1} = x+2$$

Simplify. State the excluded values when asked.

$$13. \frac{(x-5)(x+1)}{4x^3+4x^2} \cdot \frac{12x^3+8x^2}{4x^2(x+1)} = \frac{x-5}{4}$$

$$14. \frac{3m^2-m}{\frac{4}{3m-1}} = \frac{3m^2-m}{4} \cdot \frac{3m-1}{3m-1} = \frac{4}{3}$$

$$15. \frac{56(x+2)(x+1)}{56x^2+168x+112} = \frac{7(x+1)}{2x-3}$$

$$16. \frac{v^2+v-2}{v^2+9v-10} \div \frac{6v+12}{v^2+19v+90} = \frac{v+9}{6}$$

Excluded values: $x \neq \frac{3}{2}, -2$

Match the expression on the left with its simplified form on the right. That's fun!

17. $\frac{x^2 - 25}{x^2 - 3x - 10} = \frac{(x+5)\cancel{(x-5)}}{\cancel{(x-5)}(x+2)} = \frac{(x+5)}{(x+2)}$	A. $\frac{x(x-1)}{3(x+1)}$
18. $\frac{x^2 + 5x + 6}{x^2 - x - 20} \cdot \frac{x^2 + 3x - 4}{x^2 + x - 2} = \frac{(x+2)(x+3)}{(x-5)\cancel{(x+4)}} \cdot \frac{\cancel{(x+4)}(x-1)}{\cancel{(x+2)}(x-1)} = \frac{x+3}{x-5}$	B. $\frac{x+5}{x+2}$
19. $\frac{x^2 - 25}{x^2 - 16} \cdot \frac{x^2 - 4x}{2x + 10} = \frac{\cancel{(x+5)}(x-5)}{(x+4)\cancel{(x-4)}} \cdot \frac{x\cancel{(x-4)}}{2\cancel{(x+5)}} = \frac{x(x-5)}{2(x+4)}$	C. $\frac{12x}{x+3}$
20. $\frac{3x-6}{x^2-5x+6} = \frac{3\cancel{(x-2)}}{\cancel{(x-2)}(x-3)} = \frac{3}{x-3}$	D. $\frac{x(x-5)}{2(x+4)}$
21. $\frac{x^2 - 9}{x^2 + x} \div \frac{x-3}{x^2 - 1} = \frac{(x+3)\cancel{(x-3)}}{x(x+1)} \cdot \frac{\cancel{(x+1)}(x-1)}{x-3} = \frac{(x+3)(x-1)}{x}$	E. $\frac{x+3}{x-5}$
22. $\frac{x^2 - 1}{\frac{x^2 + 3x + 2}{x^2 - 2x + 1}} = \frac{x^2 - 1}{\frac{x^2 + 3x + 2}{x^2 - 2x + 1}} = \frac{x^2 - 1}{x+2} = \frac{(x+1)\cancel{(x-1)}}{\cancel{(x+1)}(x+1)} \cdot \frac{x+2}{\cancel{(x+1)}(x-1)} = \frac{1}{x-1}$	F. $\frac{3}{x-3}$
23. $\frac{3x^2 - 9x}{\frac{x-2}{x^2 - 9}} = \frac{3x^2 - 9x}{x-2} \cdot \frac{x^2 - 9}{4x - 9} = \frac{3x\cancel{(x-3)}}{\cancel{x-2}} \cdot \frac{4\cancel{(x-3)}}{(x+3)\cancel{(x-3)}} = \frac{12x}{x+3}$	G. $\frac{1}{x-1}$
24. $\frac{x^2}{x^2 + 2x + 1} \div \frac{3x}{x^2 - 1} = \frac{x^2}{(x+1)\cancel{(x+1)}} \cdot \frac{\cancel{(x+1)}(x-1)}{3x} = \frac{x(x-1)}{3(x+1)}$	H. $\frac{(x+3)(x-1)}{x}$