

List all numbers for which each expression is undefined.

1. $\frac{x-7}{8x}$

2. $\frac{4}{x+6}$

3. $\frac{x+2}{x^2-9}$

4. $\frac{x^2+4x+3}{x^2+8x-20}$

5. Simplify: $\frac{2x^2-x-3}{x^2+6x+5}$

Multiply or divide and, if possible, simplify.

6. $\frac{15t^3}{t^2+3t-54} \cdot \frac{t^2-81}{12t}$

7. $\frac{4w^2-9}{3w^2-24w} \div \frac{2w^2+13w+15}{w^2-w-56}$

Add or subtract and, if possible, simplify.

8. $\frac{4x+1}{x^2} + \frac{3x-2}{x^2}$

$$9. \frac{x-2}{x-7} + \frac{x+9}{7-x}$$

$$10. \frac{4}{t-7} + \frac{2}{t}$$

$$11. \frac{5}{x^2-16} - \frac{x+3}{x^2+3x-4}$$

$$12. \frac{2}{x+8} + \frac{3}{x^2-64} + \frac{5}{x^2+16x+64}$$

Simplify:

$$13. \frac{\frac{1}{y^2} - 9}{\frac{1}{y} + 3}$$

$$14. \frac{\frac{3}{x} - \frac{x}{3}}{\frac{2}{x} + \frac{2}{3}}$$

Solve:

$$15. \frac{1}{y} + \frac{1}{4y} = \frac{1}{5}$$

$$16. \frac{14}{x} - \frac{14}{x-5} = -5$$

$$17. \frac{t+5}{t^2+t-12} + \frac{1}{t-3} = \frac{3}{t+4}$$

18. $\frac{x}{x-12} - \frac{8}{x} = \frac{144}{x^2 - 12x}$

19. Trish and Meredith work as gardeners at the Mayflower Hotel. Trish alone can weed the gardens in 10 hours. Meredith can do the job in 12 hours alone. If both women work together, how fast can they weed the gardens at the hotel?

20. Ryan drives 20 km/h faster than Alicia. In the same time that Alicia drives 225 km, Ryan drives 325 km. Find the speed of each car.

Answer Key:

1. 0

2. -6

3. -3, 3

4. -10, 2

5. $\frac{2x-3}{x+5}$

6. $\frac{5t^2(t-9)}{4(t-6)}$

7. $\frac{(2w-3)(w+7)}{3w(w+5)}$

8. $\frac{7x-1}{x^2}$

9. $\frac{-11}{x-7}$ or $-\frac{11}{x-7}$

10. $\frac{2(3t-7)}{t(t-7)}$

11. $\frac{-(x-7)(x+1)}{(x-4)(x+4)(x-1)}$

12. $\frac{2(x^2+4x-72)}{(x-8)(x+8)^2}$

13. $\frac{1-3y}{y}$

14. $\frac{3-x}{2}$

15. $y = \frac{25}{4}$

16. $x = -2, 7$

17. $t = 18$

18. $x = -4$

19. $5\frac{5}{11}$ hrs

20. Alicia: 45km/h
Ryan: 65km/h