

Mixed Review

Simplify the expressions below, solve the equations or perform the indicated operations. Be sure to determine all and any excluded values.

1. $\frac{15}{x-6} + \frac{7x}{x-6}$

$\frac{EV}{x \neq 6}$

$$\frac{7x+15}{x-6}$$

2. $\frac{11x}{4x+9} - \frac{14}{4x+9}$

$\frac{EV}{x \neq -\frac{9}{4}}$

$$\frac{11x-14}{4x+9}$$

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

$\frac{EV}{x \neq -5, 1}$

$$\frac{-5x^2-4x+25}{4(x+5)(x-1)}$$

4. $\frac{x^2+6x+5}{x^2+8x+15}$

$\frac{EV}{x \neq -5, -3}$

$$\frac{x+1}{x+3}$$

5. $\frac{x+3}{4} * \frac{3x-18}{3x+9}$

$\frac{EV}{x \neq -3}$

$$\frac{x-6}{4}$$

6. $\frac{3x}{7x} + \frac{1}{7}$

$\frac{EV}{x \neq 0}$

$$\frac{4}{7}$$

$$7. \frac{(x-7)(x+8)}{(x+8)(x-10)} \div \frac{1}{x-10}$$

EV
x ≠ -8, 10

$$\boxed{x-7}$$

$$8. \frac{2x}{3x} - \frac{5}{6}$$

EV
x ≠ 0

$$\boxed{-\frac{1}{6}}$$

$$9. \frac{18}{5x+10} + \frac{4}{5}$$

EV
x ≠ -2

$$\boxed{\frac{4x+26}{5(x+2)}}$$

$$10. \frac{x+3}{x+2} \div \frac{(x-1)(x+3)}{(x-1)^2}$$

EV
x ≠ -3, -2, 1

$$\boxed{\frac{x-1}{x+2}}$$

$$11. \frac{4x}{x+3} - \frac{4x}{x+6}$$

EV
x ≠ -6, -3

$$\boxed{\frac{12x}{(x+6)(x+3)}}$$

$$12. -\frac{4x}{x-8} - \frac{11}{x-8}$$

EV
x ≠ 8

$$\boxed{\frac{-4x-11}{x-8}}$$

$$13. \frac{2x}{3x+3} - \frac{2}{x+5}$$

EV
x ≠ -5, -1

$$\boxed{\frac{2x^2+4x-6}{3(x+5)(x+1)}}$$

$$14. \frac{2}{v^2-12v+27} * \frac{v^2-12v+27}{3}$$

EV
v = 3, 9

$$\boxed{\frac{2}{3}}$$

$$15. \frac{3}{6x} - \frac{9}{12}$$

$\frac{EV}{x \neq 0}$

$$\frac{-3x+2}{4x}$$

$$16. \frac{3}{4} - \frac{2x}{4x-24}$$

$\frac{EV}{x \neq 6}$

$$\frac{x-18}{4(x-6)}$$

$$17. \frac{x^2-2x-15}{x^2-6x+5}$$

$\frac{EV}{x \neq 1, 5}$

$$\frac{x+3}{x+1}$$

$$18. \frac{x-8}{(x+6)(x-8)} * \frac{4x^2+40x}{x+10}$$

$\frac{EV}{x \neq -10, -6, 8}$

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

$$19. \frac{2}{5} - \frac{7}{x+6}$$

$\frac{EV}{x \neq -6}$

$$\frac{2x-23}{5(x+6)}$$

$$20. \frac{1}{7(x-3)} + \frac{4}{7}$$

$\frac{EV}{x \neq 3}$

$$\frac{4x-11}{7(x-3)}$$