

Unit 8 Rational Expressions Practice

Name Key

1. $1 = \frac{1}{3x} + \frac{4x-20}{3x}$

$3x = 1 + 4x - 20$

$3x = -19 + 4x$

$19 = x$

2. $\frac{6}{x^2} = \frac{1}{6x^2} + \frac{1}{3x} \cdot 2x$

$6 = 1 + 2x$

$5 = 2x$

$x = 5/2$

3. $\frac{(x-3)}{(x-3)x} - \frac{1}{x^2-3x} = \frac{3}{x^2-3x}$

$\frac{x-3-1}{x(x-3)x(x-3)} = \frac{3}{x(x-3)}$

$x-3-1=3$

$x-4=3$

$x=7$

5. $\frac{6x}{2} \cdot \frac{x^2+4x-5}{6x^2+30x} \rightarrow 5 \cdot \frac{x-1}{4}$

$\frac{6x}{2} \cdot \frac{(x+5)(x-1)}{6x(x+5)}$

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

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

$x+1=5$

$x=4$

6. $\frac{4(x-7)}{x+6} \div \frac{x^2-2x-35}{x+5}$

$\frac{4(x-7)}{x+6} \cdot \frac{x+5}{(x-7)(x+5)}$

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

7. $\frac{x+y}{18x^3} + \frac{x-6y}{18x^3}$

$\frac{x+y+x-6y}{18x^3}$

$\frac{2x-5y}{18x^3}$

8. $\frac{x+3}{6x^2-24x} - \frac{(x-6)}{6x^2-24x}$

$\frac{x+3-(x-6)}{6x(x-6)}$

$6x(x-6)$

$\frac{x+3-x+6}{6x(x-6)}$

$6x(x-6)$

$\frac{9}{6x(x-6)} = \frac{3}{2x(x-6)}$

$$\square 9. \frac{6x}{x+1} + \frac{3x}{x-5} (x+1)$$

$$\frac{6x(x-5) + 3x(x+1)}{(x+1)(x-5)}$$

$$6x^2 - 30x + 3x^2 + 3x$$

$$\frac{9x^2 - 27x}{(x+1)(x-5)}$$

$$\text{LCD: } 2(2x+5)$$

$$\square 10. \frac{4}{2(2x+5)} + \frac{(x+6)2}{2(2x+5)}$$

$$\frac{4(2x+5) + 2(x+6)}{2(2x+5)}$$

$$\frac{8x + 20 + 2x + 12}{2(2x+5)}$$

$$2(2x+5)$$

$$10x + 32 = \frac{2(5x+16)}{2(2x+5)}$$

$$\text{LCD: } (x+5)(x-6)2(2x+5)$$

$$\square 12. \frac{2x}{x+5} + \frac{5x}{x-6}$$

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

$$(x-6)(x+5)$$

$$2x^2 - 12x + 5x^2 + 25x$$

$$(x+5)(x-6)$$

$$7x^2 - 13x$$

$$\frac{7x^2 - 13x}{(x+5)(x-6)}$$

$$\frac{2(5x+16)}{2(2x+5)}$$

$$\frac{5x+16}{2x+5}$$

$$\square 11. \frac{5}{5} \frac{(5x-5)}{(3x+1)} - \frac{3}{5} \frac{(3x+1)}{(3x+1)} \text{ LCD: } 5(3x+1)$$

$$\frac{25x - 25 - 9x - 3}{5(3x+1)}$$

$$5(3x+1)$$

$$16x - 28$$

$$\frac{16x - 28}{5(3x+1)}$$

ANSWERS:

A	$\frac{x-1}{2}$	H	$\frac{4}{x+6}$
B	$x = \frac{5}{2}$	I	$\frac{9x^2 - 27x}{(x-5)(x+1)}$
C	$x = 10, x = -3$	J	$\frac{2x - 5y}{18x^3}$
D	$x = 19$	K	$\frac{4x^2 - 24x + 5}{3x(x-6)}$
E	$\frac{5x+16}{2x+5}$	L	$\frac{3}{2x^2 - 8x}$
F	$x = 7$	M	$\frac{16x - 28}{5(3x+1)}$
G	$x = 4$	N	$\frac{7x^2 + 13x}{(x-6)(x+5)}$