



Chapter 6

PRACTICE TEST

Assignment

Complete pg. 355
Questions (1-5, 6, 8, and 11)

Solutions

MULTIPLE CHOICE

For #1 to #5,
choose the
best answer.

1. What are the non-permissible values for the rational expression $\frac{x(x+2)}{(x-3)(x+1)}$?

$$\Rightarrow x-3 \neq 0 \quad \text{and} \quad x+1 \neq 0$$

$$x \neq 3 \quad \quad \quad x \neq -1$$

SOLUTION: D

2. Simplify the rational expression $\frac{x^2-7x+6}{x^2-2x-24}$ for all possible values of x .

$$\Rightarrow \frac{x^2-7x+6}{x^2-2x-24}$$

$$= \frac{(x-1)\cancel{(x-6)}}{\cancel{(x-6)}(x+4)}$$

$$= \frac{(x-1)}{(x+4)}, \quad x \neq 6, -4$$

SOLUTION: B

Solutions

3. Simplify $\frac{8}{3y} + \frac{5y}{4} - \frac{5}{8}$ for all permissible values of y .

$$\begin{aligned} &\Rightarrow \frac{8}{3y} + \frac{5y}{4} - \frac{5}{8} \\ &= \frac{64}{24y} + \frac{30y^2}{24y} - \frac{15y}{24y} \\ &= \frac{30y^2 - 15y + 64}{24y} \end{aligned}$$

SOLUTION: A

4. Simplify $\frac{3x-12}{9x^2} \div \frac{x-4}{3x}$, $x \neq 0$ and $x \neq 4$.

$$\begin{aligned} &\Rightarrow \frac{3x-12}{9x^2} \div \frac{x-4}{3x} \\ &= \frac{3(\cancel{x-4})}{9x^2} \times \frac{3\cancel{x}}{\cancel{x-4}} \\ &= \frac{9}{9x} \\ &= \frac{1}{x}, x \neq 0 \end{aligned}$$

SOLUTION: A

Solutions

5. Solve $\frac{6}{t-3} = \frac{4}{t+4}$, $t \neq 3$ and $t \neq -4$.

$$\Rightarrow \frac{6}{t-3} = \frac{4}{t+4}$$

$$(\cancel{t-3})(t+4) \left[\frac{6}{\cancel{t-3}} \right] = (t-3)(\cancel{t+4}) \left[\frac{4}{\cancel{t+4}} \right]$$

$$6(t+4) = 4(t-3)$$

$$6t+24 = 4t-12$$

$$6t-4t = -12-24$$

$$\frac{2t}{2} = \frac{-36}{2}$$

$$t = -18, t \neq 3, -4.$$

SOLUTION: D.

6. Identify all non-permissible values.

$$\frac{3x-5}{x^2-9} \times \frac{2x-6}{3x^2-2x-5} \div \frac{x-3}{x+3}$$

I worked it out as well!!

$$= \frac{3x-5}{(x-3)(x+3)} \times \frac{2(x-3)}{(3x^2+3x-5x-5)} \times \frac{x+3}{x-3}$$

$$= \frac{3x-5}{(x-3)(x+3)} \times \frac{2(x-3)}{3x(x+1)-5(x+1)} \times \frac{x+3}{x-3}$$

$$= \frac{\cancel{3x-5}}{(\cancel{x-3})(x+3)} \times \frac{2(\cancel{x-3})}{(x+1)(\cancel{3x-5})} \times \frac{x+3}{x-3}$$

$$= \frac{2}{(x+1)(x-3)}, x \neq 3, -3, -1, \frac{5}{3}$$

$$\left. \begin{array}{l} x-3 \neq 0 \\ x+3 \neq 0 \end{array} \right\} \begin{array}{l} x \neq 3 \\ x \neq -3 \end{array}$$

$$\left. \begin{array}{l} x+1 \neq 0 \\ 3x-5 \neq 0 \end{array} \right\} \begin{array}{l} x \neq -1 \\ \frac{3x-5}{3} \neq 0 \end{array}$$

$$x \neq \frac{5}{3}$$

Solutions

8. Add or subtract as indicated. Give your answer in simplest form.

$$\begin{aligned}
 & \frac{5y}{6} + \frac{1}{y-2} - \frac{y+1}{3y-6} \\
 = & \frac{5y}{6} + \frac{1}{y-2} - \frac{y+1}{3(y-2)} \\
 = & \frac{5y(y-2)+1(6)}{6(y-2)} - \frac{2(y+1)}{6(y-2)} \\
 = & \frac{5y^2-10y+6}{6(y-2)} - \frac{2y-2}{6(y-2)} \\
 = & \frac{5y^2-10y+6-2y+2}{6(y-2)} \\
 = & \frac{5y^2-12y+8}{6(y-2)} \\
 = & \frac{(5y^2-10y)(-2y+4)}{6(y-2)} \\
 = & \frac{5y(y-2)-2(y-2)}{6(y-2)} \\
 = & \frac{(y-2)(5y-2)}{6(y-2)} \\
 = & \frac{5y-2}{6}, y \neq 2
 \end{aligned}$$

Solutions

11. Solve $2 - \frac{5}{x^2 - x - 6} = \frac{x+3}{x+2}$

$$2 - \frac{5}{(x-3)(x+2)} = \frac{x+3}{x+2}$$

$$(x-3)(x+2) \left[2 - \frac{5}{(x-3)(x+2)} \right] = (x-3)(x+2) \left[\frac{x+3}{x+2} \right]$$

$$(x-3)(x+2)[2] - (x-3)(x+2) \left[\frac{5}{(x-3)(x+2)} \right] = (x-3)(x+2) \left[\frac{x+3}{x+2} \right]$$

$$2(x-3)(x+2) - 5 = (x-3)(x+3)$$

$$2(x^2 + 2x - 3x - 6) - 5 = x^2 + 3x - 3x - 9$$

$$2x^2 + 4x - 6x - 12 - 5 = x^2 - 9$$

$$2x^2 - x^2 - 2x - 17 + 9 = 0$$

$$x^2 - 2x - 8 = 0$$

$$(x-4)(x+2) = 0$$

$$x-4=0 \text{ or } x+2=0$$

$$x=4$$

$$x=-2, x \neq 3, -2$$

↓
Extraneous