

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Adding and Subtracting Rational Expressions

Add or subtract. Write each answer in fully reduced form and keep the original denominator restrictions.

1. $\frac{-6}{2} - \frac{7}{6z-1}$

2. $\frac{9r-9}{r+9} - \frac{-2}{7r-5}$

3. $\frac{-2z^5+6z^2}{3z^6+5z} + \frac{5z^6-9}{3z^6+5z}$

4. $\frac{-3z-9}{-9z+7} - \frac{3z+1}{8z-4}$

5. $\frac{5x-2}{-x-5} + \frac{9}{5x-9}$

6. $\frac{-2p^2-6z^2}{2p^5z^4} - \frac{-9z^4+4z^3}{2p^5z^4}$

7. $\frac{8s-9}{-8s-1} + \frac{-6}{4}$

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

9. $\frac{q+2}{q^6-1} + \frac{-3}{q^6-1}$

10. $\frac{4p^2+8p}{4m^3p^2} + \frac{-4p^2-13p}{4m^3p^2}$

Adding and Subtracting Rational Expressions

Answer Key

Add or subtract. Write each answer in fully reduced form and keep the original denominator restrictions.

$$\begin{aligned}
 1. \quad & \frac{-6}{2} - \frac{7}{6z-1} \\
 &= \frac{-18z-4}{6z-1} \\
 \text{Restrictions: } & 6z-1 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & \frac{9r-9}{r+9} - \frac{-2}{7r-5} \\
 &= \frac{63r^2-106r+63}{7r^2+58r-45} \\
 \text{Restrictions: } & r+9 \neq 0 \\
 & 7r-5 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & \frac{-2z^5+6z^2}{3z^6+5z} + \frac{5z^6-9}{3z^6+5z} \\
 &= \frac{5z^6-2z^5+6z^2-9}{3z^6+5z} \\
 \text{Restrictions: } & 3z^6+5z \neq 0
 \end{aligned}$$

$$\begin{aligned}
 4. \quad & \frac{-3z-9}{-9z+7} - \frac{3z+1}{8z-4} \\
 &= \frac{-3z^2+72z-29}{72z^2-92z+28} \\
 \text{Restrictions: } & -9z+7 \neq 0 \\
 & 8z-4 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 5. \quad & \frac{5x-2}{-x-5} + \frac{9}{5x-9} \\
 &= \frac{-25x^2+64x+27}{5x^2+16x-45} \\
 \text{Restrictions: } & -x-5 \neq 0 \\
 & 5x-9 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & \frac{-2p^2-6z^2}{2p^5z^4} - \frac{-9z^4+4z^3}{2p^5z^4} \\
 &= \frac{9z^4-4z^3-2p^2-6z^2}{2p^5z^4} \\
 \text{Restrictions: } & 2p^5z^4 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 7. \quad & \frac{8s-9}{-8s-1} + \frac{-6}{4} \\
 &= \frac{-40s+15}{16s+2} \\
 \text{Restrictions: } & -8s-1 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & \frac{2n^4-2n^2}{5x^3} - \frac{4n-4x}{5x^3} \\
 &= \frac{2n^4-2n^2-4n+4x}{5x^3} \\
 \text{Restrictions: } & 5x^3 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 9. \quad & \frac{q+2}{q^6-1} + \frac{-3}{q^6-1} \\
 &= \frac{1}{q^5+q^4+q^3+q^2+q+1} \\
 \text{Restrictions: } & q^6-1 \neq 0
 \end{aligned}$$

$$\begin{aligned}
 10. \quad & \frac{4p^2+8p}{4m^3p^2} + \frac{-4p^2-13p}{4m^3p^2} \\
 &= \frac{-5}{4m^3p} \\
 \text{Restrictions: } & 4m^3p^2 \neq 0
 \end{aligned}$$