

Review for Rational Functions Test

Solve each inequality.

$$25) \frac{-x+4}{2x-10} > -1$$

$$26) \frac{x-27}{x+1} \leq -3$$

$$27) \frac{x-217}{3x+21} \leq -5$$

$$28) \frac{x^2+3x-10}{x^2-x-42} > 0$$

$$29) \frac{x^2+2x-24}{x^2+15x+56} > 0$$

$$30) \frac{x^2+10x+21}{x^2-7x+12} \geq 0$$

Simplify each expression.

$$31) \frac{6x}{x-2} - \frac{4}{2x+2}$$

$$32) 2 + \frac{b+3}{25b^2+105b-100}$$

$$33) \frac{2}{k+4} + \frac{2}{k-6}$$

$$34) \frac{5m}{20m^3-54m^2+36m} - \frac{2}{3}$$

$$35) \frac{4p}{2p-4} - \frac{6p}{3p-2}$$

$$36) \frac{4p}{3p^2+12p} + \frac{4}{3p+4}$$

$$37) \frac{\frac{1}{u} + \frac{u}{5}}{\frac{16}{5}}$$

$$38) \frac{\frac{1}{2} - \frac{1}{m}}{m^2}$$

$$39) \frac{\frac{1}{x} + \frac{x-3}{x^2}}{\frac{x-3}{x}}$$

$$40) \frac{\frac{25}{u+2} - \frac{u+2}{5u}}{\frac{1}{u} - \frac{1}{2}}$$

$$41) \frac{\frac{u+3}{u+1} + \frac{25}{u+1}}{\frac{2}{25} + \frac{4}{u+1}}$$

$$42) \frac{\frac{4}{9} + \frac{u}{9}}{\frac{25}{9} + \frac{4}{5u}}$$

Simplify each and state the excluded values.

$$43) \frac{49r^2 + 21r - 54}{28r^2 - 24r} \cdot \frac{10r^3 + 10r^2}{7r + 9}$$

$$44) \frac{7p^2 - 80p + 100}{35p^3 + 50p^2} \div \frac{56p - 80}{35p^3 + 50p^2}$$

$$45) \frac{35x^2 + 7x}{5x + 2} \div \frac{20x + 4}{20x + 8}$$

$$46) \frac{2n^2 + 10n + 8}{2n + 2} \cdot \frac{6n + 12}{3n^2 + 24n + 36}$$

$$47) \frac{49k^2 + 28k - 45}{7k^2 - 61k - 90} \div \frac{7k - 5}{k^2 - 6k - 16}$$

$$48) \frac{15k^3 - 5k^2}{5k^2 + 45k} \cdot \frac{7k}{21k^2 - 7k}$$

Solve each equation. Remember to check for extraneous solutions.

$$49) \frac{1}{x} = \frac{1}{x^2 + 5x} - \frac{x - 2}{x^2 + 5x}$$

$$50) \frac{4}{m + 5} + \frac{2}{m^2 + 3m - 10} = \frac{1}{m^2 + 3m - 10}$$

$$51) \frac{1}{x^2 + 3x} + \frac{1}{x} = \frac{6}{x^2 + 3x}$$

$$52) \frac{n - 2}{n^2 - 8n} + \frac{n + 2}{n^3 - 2n^2 - 48n} = \frac{n + 4}{n^2 - 8n}$$

$$53) \frac{p + 2}{p - 6} = \frac{1}{p^2 - 12p + 36} + 8$$

$$54) \frac{x + 1}{x} + \frac{1}{x^2 - 3x} = 1$$

Answers to Review for Rational Functions Test

- 25) $(-\infty, 5) \cup (6, \infty)$ 26) $(-1, 6]$ 27) $(-7, 7]$
 28) $(-\infty, -6) \cup (-5, 2) \cup (7, \infty)$ 29) $(-\infty, -8) \cup (-7, -6) \cup (4, \infty)$ 30) $(-\infty, -7] \cup [-3, 3) \cup (4, \infty)$
 31) $\frac{6x^2 + 4x + 4}{(x-2)(x+1)}$ 32) $\frac{50b^2 + 211b - 197}{5(5b-4)(b+5)}$ 33) $\frac{4k-4}{(k-6)(k+4)}$
 34) $\frac{-57 - 40m^2 + 108m}{6(2m-3)(5m-6)}$ 35) $\frac{8p}{(p-2)(3p-2)}$ 36) $\frac{24p+64}{3(p+4)(3p+4)}$
 37) $\frac{5+u^2}{16u}$ 38) $\frac{m-2}{2m^3}$ 39) $\frac{2x-3}{x^2-3x}$ 40) $\frac{242u-2u^2-8}{20-5u^2}$
 41) $\frac{25u+700}{2u+102}$ 42) $\frac{20u+5u^2}{125u+36}$ 43) $\frac{5r(r+1)}{2}; \left\{0, \frac{6}{7}, -\frac{9}{7}\right\}$
 44) $\frac{p-10}{8}; \left\{0, -\frac{10}{7}, \frac{10}{7}\right\}$ 45) $7x; \left\{-\frac{2}{5}, -\frac{1}{5}\right\}$ 46) $\frac{2(n+4)}{n+6}; \{-1, -6, -2\}$
 47) $\frac{(k-8)(k+2)}{k-10}; \left\{10, -\frac{9}{7}, 8, -2, \frac{5}{7}\right\}$ 48) $\frac{k}{k+9}; \left\{0, -9, \frac{1}{3}\right\}$ 49) $\{-1\}$
 50) $\left\{\frac{7}{4}\right\}$ 51) $\{2\}$ 52) $\left\{-\frac{34}{5}\right\}$ 53) $\left\{7, \frac{43}{7}\right\}$
 54) $\{2\}$