

Write the rational expression in lowest terms.

$$1) \frac{3z^2 + 10z - 8}{4z^2 + 21z + 20}$$

$$2) \frac{3x^2 - 27}{18 - 6x}$$

$$3) \frac{y^3 - 216}{y - 6}$$

$$4) \frac{a^2 - ab + 2a - 2b}{a + 2}$$

$$5) \frac{4 - m}{m - 4}$$

$$6) \frac{y^2 - 4y - 21}{y^2 + 12y + 27}$$

$$7) \frac{14x^2 - x - 3}{2x^2 - 7x + 3}$$

$$8) \frac{5x^2 - 20y^2}{2y - x}$$

Perform the indicated operation and simplify.

$$9) \frac{4p - 4}{p} \cdot \frac{5p^2}{2p - 2}$$

$$10) \frac{x}{x^2 - 16} - \frac{3}{x^2 + 5x + 4}$$

Perform the indicated operation and simplify.

$$11) \frac{z^2 + 14z + 49}{z^2 + 15z + 56} \div \frac{z^2 + 7z}{z^2 + 3z - 40}$$

$$12) \frac{k^2 + 8k + 16}{k^2 + 13k + 36} \cdot \frac{k^2 + 9k}{k^2 + 7k + 12}$$

$$13) \frac{6t - 6}{2t^2 + t - 1} \cdot \frac{t^2 - 1}{t^2 - 2t + 1}$$

$$14) \frac{2a^2 + 5a - 3}{a^2} \cdot \frac{5a^3 + 30a^2}{2a^2 + 7a - 4} \div \frac{a^2 + 6a}{a^2 + 7a + 12}$$

Perform the indicated operation. Write the answer in lowest terms.

$$15) \frac{3}{r} + \frac{5}{r - 9}$$

$$16) \frac{3}{y^2 - 3y + 2} + \frac{7}{y^2 - 1}$$

$$17) \frac{24}{x^2 + 4x} + \frac{4}{x} + \frac{6}{x + 4}$$

$$18) \frac{2a}{a + 1} - \frac{4a}{1 - a^2}$$

$$19) \frac{3x}{x + 2} - \frac{x}{x - 2} + \frac{8}{x^2 - 4}$$

Simplify the complex fraction.

$$20) \frac{4 + \frac{2}{x}}{\frac{x}{3} + \frac{1}{6}}$$

$$21) \frac{\frac{3}{3r - 1} - 3}{\frac{3}{3r - 1} + 3}$$

$$22) \frac{\frac{x^2}{x^2 - y^2}}{\frac{-x}{x + y}}$$

Simplify the complex fraction.

$$23) \frac{m^{-1} + z^{-1}}{m^{-1} - z^{-1}}$$

Solve the equation.

$$24) \frac{23}{x} = 6 - \frac{1}{x}$$

$$25) \frac{5}{x + 3} = \frac{3}{x + 2}$$

Solve the equation.

$$26) \frac{3}{y+3} - \frac{9}{y-3} = \frac{6}{y^2-9}$$

$$27) \frac{m+5}{m^2-9m+20} - \frac{5}{m^2-10m+25} = \frac{m-5}{m^2-9m+20}$$

$$28) \frac{1}{x+7} + \frac{5}{x+6} = \frac{-1}{x^2+13x+42}$$

Solve the equation for the specified variable.

$$29) \frac{1}{a} + \frac{1}{b} = c \text{ for } b$$

$$30) \text{ The simple interest formula: } P = \frac{A}{1+rt} \text{ for } r$$

$$31) \frac{1}{p} + \frac{1}{q} = \frac{1}{f}$$

Solve.

- 32) The sum of a number and -45 times its reciprocal is -4 . Find the numbers.
- 33) Alice can vacuum in 25 minutes. It takes Bob 40 minutes to do the same job. Find the time it takes Alice and Bob to do the job together.
- 34) To travel 60 miles, it takes Sue, riding a moped, 2 hours less time than it takes Ann to travel 50 miles riding a bicycle. Sue travels 10 miles per hour faster than Ann. **Find the times and rates of both girls.**
- 35) A recipe for pizza crust calls for $3\frac{1}{2}$ cups of whole wheat flour and $1\frac{1}{4}$ cups of warm water. If 6 cups of whole wheat flour are used, how much water should be used?

Answer Key

Testname: M117-TEST2-PRACTICE EXAM.TST

- 1) Answer: $\frac{3z - 2}{4z + 5}$
- 2) Answer: $-\frac{x + 3}{2}$
- 3) Answer: $y^2 + 6y + 36$
- 4) Answer: $a - b$
- 5) Answer: -1
- 6) Answer: $\frac{y - 7}{y + 9}$
- 7) Answer: $\frac{7x + 3}{x - 3}$
- 8) Answer: $-5(x + 2y)$
- 9) Answer: $10p$
- 10) Answer: $\frac{x^2 - 2x + 12}{x^2 - 16}$
- 11) Answer: $\frac{z - 5}{z}$
- 12) Answer: $\frac{k}{k + 3}$
- 13) Answer: $\frac{6}{2t - 1}$
- 14) Answer: $\frac{5(a + 3)^2}{a}$
- 15) Answer: $\frac{8r - 27}{r(r - 9)}$
- 16) Answer: $\frac{10y - 11}{(y - 1)(y + 1)(y - 2)}$
- 17) Answer: $\frac{10}{x}$
- 18) Answer: $\frac{2a}{a - 1}$
- 19) Answer: $\frac{2(x - 2)}{x + 2}$
- 20) Answer: $\frac{12}{x}$
- 21) Answer: $\frac{2 - 3r}{3r}$
- 22) Answer: $\frac{-x}{x - y}$
- 23) Answer: $\frac{z + m}{z - m}$
- 24) Answer: $\{4\}$
- 25) Answer: $-1/2$
- 26) Answer: $\{-7\}$
- 27) Answer: $\{6\}$
- 28) Answer: $\{ \}$
- 29) Answer: $b = \frac{a}{ac - 1}$
- 30) Answer: $r = \frac{A - P}{Pt}$
- 31) Answer: $f = \frac{pq}{q + p}$
- 32) Answer: -9 and 5
- 33) Answer: $15\frac{5}{13}$ minutes
- 34) Answer: Ann 10mph, time 5 hours Sue
20mph 3 hours
- 35) Answer: $2\frac{1}{7}$ cups