

9th Grade Assignment – Week #33

Group Assignment:

For Tuesday

- Do these problems:
Fractions & Square Roots – Problem Set #2: Problems #1-13
Fractions & Square Roots – Problem Set #3: Problems #2-14

For Thursday

- Do these problems:
Fractions & Square Roots – Problem Set #4: Problems #1, 16-20, 24, 25

Individual Work

- As much as possible, do the problems from **Fractions & Square Roots – Problem Sets #2, #3, #4** that either weren't assigned for group work, or that your group didn't complete.

Additionally... (If you or your group has extra time and desire)

- Work on **Possibility & Probability – Problem Set #5.**

Problem Set #2

Group Work

Simplify.

- 1) $\sqrt{8}$
- 2) $\sqrt{80}$
- 3) $\sqrt{800}$
- 4) $\sqrt{8000}$
- 5) Use a calculator to give a decimal approximation:
 - a) $\sqrt{50}$
 - b) $5\sqrt{2}$
 - c) $\sqrt{300}$
 - d) $10\sqrt{3}$
- e) What do the above four answers show us?
- 6) $\sqrt{2^4 \cdot 3^2 \cdot 5}$
- 7) $\sqrt{2^4 \cdot 3^2 \cdot 5^3}$
- 8) $\sqrt{2^5 \cdot 3^4 \cdot 5^3}$
- 9) $\frac{3x^4 - 6x^3 - 18x^2}{3x}$
- 10) $\frac{x^2 + 8x + 12}{x + 6}$
- 11) $\frac{x^2 - x - 12}{x^2 - 9}$
- 12) $\frac{2}{2 - \frac{2}{3}}$
- 13) $\frac{2}{2 - \frac{2}{x}}$

Homework

Simplify.

- 14) $\sqrt{490}$
- 15) $\sqrt{44}$

- 16) $\sqrt{45}$
- 17) $\sqrt{450}$
- 18) $\sqrt{3^5}$
- 19) $\sqrt{3^6}$
- 20) $\sqrt{3^2 \cdot 5^4 \cdot 11^2}$
- 21) $\sqrt{3^2 \cdot 5^3 \cdot 11^3}$
- 22) $\frac{12x^3y^2 - 10x^2y^4}{2xy}$
- 23) $\frac{2x^3 - 8x^2 - 24x}{2x}$
- 24) $\frac{2x^3 - 8x^2 - 24x}{x + 2}$
- 25) $\frac{x^2 + 2x - 24}{x^2 - 6x + 8}$
- 26) $\frac{x^2 - 4x - 5}{x^2 - 25}$
- 27) $\frac{x^3 - 6x^2 + 9x}{4x^2 + 8x - 60}$
- 28) $\frac{18x^5 - 15x^3}{3x^2}$
- 29) $\frac{x^2 - 16}{x^2 + x - 20}$
- 30) $\frac{3}{3 - \frac{3}{3 - \frac{3}{x}}}$
- 31) $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$
- 32) The difference of two numbers is four and the sum of their squares is 58. What are the two numbers?

Problem Set #3

Group Work

1) One rule for simplifying square roots is that a square root is not allowed in the denominator. How then can

you simplify $\frac{3}{\sqrt{5}}$?

Simplify.

2) $\frac{5}{\sqrt{2}}$

3) $\frac{6}{\sqrt{7}}$

4) $\frac{\sqrt{3}}{\sqrt{5}}$

5) $\frac{\sqrt{6}}{\sqrt{3}}$

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

7) $\frac{x-4}{4-x}$

8) $\frac{x+4}{4-x}$

9) $\frac{2}{5x^2} - \frac{3}{10x}$

10) $\frac{3}{x+4} + \frac{4}{x+1}$

11) $\frac{5x}{2x+6} - \frac{3}{x^2+3x}$

Find the reciprocal.

(Give simplified answers.)

12) $\frac{x-3}{x^2}$

13) $\sqrt{5}$

14) $\frac{\sqrt{3}}{3}$

Homework

Simplify.

15) $\sqrt{48}$

16) $\sqrt{30}$

17) $\sqrt{2520}$

18) $\frac{5}{\sqrt{2}}$

19) $\frac{6}{\sqrt{6}}$

20) $\frac{\sqrt{5}}{\sqrt{7}}$

21) $\frac{\sqrt{15}}{\sqrt{5}}$

22) $\frac{3\sqrt{2}}{2\sqrt{10}}$

23) $\frac{20x^3y^4 - 15x^4y^7 + 10x^2y^2}{5xy^2}$

24) $\frac{14x}{21x^4}$

25) $\frac{x^2 - 10x + 21}{x^2 + 10x - 39}$

26) $\frac{2x^3 - 16x^2 + 24x}{x^2 + 4x - 12}$

27) $\frac{x^2 - 9}{x^2 - 4x + 3}$

28) $\frac{9 - x^2}{x^2 - 4x + 3}$

29) $\frac{1 - \frac{4}{x^2}}{x + 2}$

30) $\frac{c + \frac{3c}{c-3}}{c - \frac{3c}{c+3}}$

31) $\frac{5}{2x^2y^3} + \frac{3}{4xy^5}$

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

33) $\frac{6}{x+5} + \frac{2}{x-3}$

34) Find the common solution
 $4x - 3y = 18$
 $2x + 5y = -17$

Problem Set #4

Group Work

Solve.

$$1) \quad \frac{8}{4x-3} = \frac{1}{x} + \frac{1}{x-2}$$

Homework

Give the Reciprocal.

$$2) \quad \sqrt{13}$$

$$3) \quad \frac{2}{\sqrt{2}}$$

Simplify.

$$4) \quad 7\sqrt{3} + 8\sqrt{3}$$

$$5) \quad 5\sqrt{6} - 8\sqrt{6}$$

$$6) \quad 5\sqrt{6} + 3\sqrt{7}$$

$$7) \quad \sqrt{12} + \sqrt{27}$$

$$8) \quad (2\sqrt{5})^2$$

$$9) \quad (3\sqrt{6})^2$$

$$10) \quad \frac{x+7}{7+x}$$

$$11) \quad \frac{x-3}{x+3}$$

$$12) \quad \frac{x-9}{9-x}$$

$$13) \quad \frac{3x^4-5}{5-3x^4}$$

$$14) \quad \frac{6x^5}{8x}$$

$$15) \quad \frac{7}{x+2} + \frac{3}{x-5}$$

$$16) \quad \frac{7}{x+2} - \frac{3}{x-5}$$

$$17) \quad \frac{5}{x+5} + \frac{4}{x-5}$$

$$18) \quad \frac{5}{5-x} + \frac{4}{x-5}$$

$$19) \quad \frac{\frac{1}{m} - \frac{1}{2m}}{\frac{2}{m}}$$

$$20) \quad \frac{\frac{8x^3-8x}{x^2-2x-3}}{\frac{10x^6-10x^5}{x^2+x-12}}$$

$$21) \quad \frac{x - \frac{1}{2x+1}}{1 - \frac{2}{2x+1}}$$

$$22) \quad \frac{\frac{\frac{x}{y} - \frac{y}{x}}{\frac{y}{x} - \frac{x}{y}}}{\frac{1}{2x} - \frac{1}{2y}}$$

Solve.

$$23) \quad \frac{2}{x} + \frac{3}{x-1} = 4$$

$$24) \quad \frac{3}{2x-1} - \frac{2x+1}{3} = 2$$

$$25) \quad \frac{3}{x+4} = \frac{2}{x^2-16} + \frac{1}{x-4}$$

$$26) \quad \frac{1}{2x-6} - \frac{1}{3x-6} = \frac{x-1}{x^2-5x+6}$$

27) The sum of two numbers is 5. One of the numbers squared is 7 more than the other. What are the two numbers?

Problem Set #5

Section A

- 1) How many 5-letter words (which don't have to spell anything) can be made using A, B, C, D, and E...
 - a) if each letter may only be used once?
 - b) if letters may repeat?
- 2) There are 10 applicants for three different job positions at a department store. How many ways are there to fill the three positions?
- 3) In how many ways can a student select 4 college courses from a set of 9 courses (that meet at different times)?
- 4) How many different arrangements of the word "MISSISSIPPI" are there?
- 5) In a class of 12 students, the teacher must choose a different student for each day of the coming school week to give a presentation. How many possible line-ups are there?
- 6) In a class of 12 students, the teacher must choose five students to go to a math party. How many possible choices are there for this group?
- 7) On a circle lie 10 points. How many chords (connecting lines) can be drawn between these points?
- 8) In how many ways can 3 red, 4 blue, and 2 green pens be distributed to 9 students seated in a row if each student receives one pen?

- 9) One card is drawn at random from a 52-card deck. Find the probability that...
 - a) it is the king of clubs.
 - b) it is a red queen.
 - c) it is a 7 or 8.
- 10) A coin is tossed 5 times. Find the probability that...
 - a) they will all be heads.
 - b) exactly two will be tails.
- 11) Use Pascal's triangle to expand...
 - a) $(x+y)^5$
 - b) $(x+10)^5$

Section B

- 12) How many ways can all 16 white chess pieces be arranged in a row? (Each color has 8 pawns, 2 rooks, 2 bishops, 2 knights, 1 king, and 1 queen.)
- 13) How many ways...
 - a) can we break 21 students into 7 groups of three?
 - b) can they be broken into 3 groups of seven?
- 14) A coin is tossed 7 times. Find the probability that...
 - a) At least 5 tosses come up tails.
 - b) At least one toss comes up heads.
- 15) With a five-card poker hand, what is the probability of getting...
 - a) a pair of aces and a pair of kings?
 - b) two pairs of different kinds (e.g., two aces and two 5's)?