Chapter 7.5 Complex Expressions

Defin Complex fraction –

Types of Complex fractions

1. Single termed –

ⓐ ⓑ

2. Multiplied term

ⓒ ⓓ

Method Simplifying Single termed Complex fractions

1.

2.

3.

Eg $\dfrac{\dfrac{m^2n^3}{p}}{\dfrac{m^4n}{p^2}}$

① $\dfrac{\dfrac{36x^4}{5y^4z^5}}{\dfrac{9xy^2}{15z^5}}$

② $\dfrac{\frac{x}{x+y}}{\frac{x^2}{2x+2y}}$

Method | **Simplifying Multiple termed Complex fractions**

Method 1

1.

2.

3.

Eg $\dfrac{\frac{2}{5}+\frac{1}{4}}{\frac{1}{2}+\frac{1}{3}}$

① $\dfrac{\frac{1}{a+1}+\frac{2}{b-2}}{\frac{2}{b-2}-\frac{1}{a+3}}$

② $\dfrac{\frac{1}{x^2}+\frac{1}{x}}{\frac{1}{x}+\frac{1}{x^3}}$

③ $\dfrac{\frac{3x}{y}-x}{\frac{y}{x}-1}$

Method 2

1.

2.

3.

Eg $$\frac{\frac{1}{x}+\frac{2}{x^2}}{2+\frac{1}{x^2}}$$

1 $$\frac{\frac{2}{3}-\frac{1}{4}}{\frac{4}{9}+\frac{1}{2}}$$

2 $$\frac{\frac{2}{a^2b}+\frac{3}{ab^2}}{\frac{4}{a^2b^2}-\frac{1}{ab}}$$

3 $$\frac{\frac{1}{x}+\frac{2}{x-1}}{\frac{4}{x-1}}$$

Chapter 7.6 Equations w/ Rat. Expr

Defin Rational Equation -

Eg $\frac{2}{y} + \frac{1}{2} = \frac{5}{2y}$

Method **Solving Rational Equations**

1.

2.

3.

4.

5.

Eg $\frac{2}{y} + \frac{1}{2} = \frac{5}{2y}$

Eg $1 - \frac{2}{x+1} = \frac{2x}{x+1}$

1. $\frac{2m-3}{5} - \frac{m}{3} = -\frac{6}{5}$

② $\frac{2}{p^2-2p} = \frac{3}{p^2-p}$

③ $\frac{8r}{4r^2-1} = \frac{3}{2r+1} + \frac{3}{2r-1}$

④ $\frac{1}{x-2} + \frac{1}{5} = \frac{2}{5(x^2-4)}$

⑤ $\frac{6}{5a+10} - \frac{1}{a-5} = \frac{4}{a^2-3a-10}$

⑥ $\frac{2a-16}{4(a+1)} + \frac{a}{2a+2} = \frac{a-3}{a+1}$

Method — Solving for a given Variable

1.

2.

3.

4.

Eg Solve for E:

$$I = \frac{KE}{R}$$

1 Solve for q:

$$\frac{3}{K} = \frac{1}{P} + \frac{5}{q}$$

2 Solve $z = \frac{x}{x+y}$ for y

Chapter 7.7 Applications of Real Numbers

Recall problem solving strategy

1
2
3
4
5
6

Number Type problems

1
2

Eg. A certain number is added to the numerator and subtracted fro the denominator of 5/8. the new number equals the reciprocal of 5/8. Find the number.

4,6,8

Motion Problem Types (Solving problems with d=rt)

1
2
3

Eg. At the 2002 Olympics, Casy Fitzgerald of the United States won the 500-m speed skating event for men in 69.23 sec. What was his rate (to the nearest hundredth of a second)?

Problem: In 1973, the Indianapolis 500 race was only 332.5 mi. Gordon Johncock won with a rate of 159.036 mph. What was his time (to the nearest hundredth of an hour)?

Eg. A boat can go 10 mi against a current in the same time it can go 30 mi with the current. The current flows at 4 mph. Find the speed of the boat with no current.

#20, 22, 24

Solving Work Type Problems:

Use the fact: the rate of work is 1/t job per unit of time

1

2

3

Eg. Al and Mario operate a small roofing company. Mario can roof an average house alone in 9 hr. Al can roof a house alone in 8 hr. How long will it take them to do the job if they work together?

#32, 34, 36

Chapter 7.8 Variation

Direct Variation

Means:

A.

B.

Definition:

Solve Direct Variation Problems:

1

2

3

4

5

Eg. If z varies directly as t, and z = 11 when t = 4, find z when t=32.

Class: The circumference of a circle varies directly as the radius. A circle with a radius of 7cm has a circumference of 43.96cm. Find the circumference if the radius is 11cm

Direct variation with Power

1

2

3

Eg. B varies directly as the cube of C. When B = 12, C is 2. What is the value of B when C is 6?

Indirect variation

Means:

A

B

Eg. A car travels 40mi.

Definition:

Solve Indirect Variation problems:

1

2

3

4

5

Eg. Z varies indirectly as a and when $a = 15$, $z = 6$. Determine what z is when $a = 4$.

Indirect Variation with a Power

1

2

3

Eg. Suppose y varies inversely as the square of x. If $y=5$ when $x=2$, find y when $x=10$.

1. B varies indirectly as the cube of C. when $B=12$, C is 2 What is the value of B when C is 6?

2. If the cost of producing pairs of rubber gloves varies inversely as the # of pairs produced, and 5000 pairs can be produced for $.50 per pair, how much will it cost to produced 10,000 pairs?