

**MATD 0370 – Elementary Algebra – Review Sheet for Exam #4****Show your work on your own paper – you will not receive credit for answers only.****Do not write on this sheet.****Remember, each problem represents a concept to review****Also review your last exam – any of those topics can be on this exam.**

1) List all numbers for which the rational expression is undefined:  $\frac{x-5}{(x-4)(2x+1)}$

2) List all numbers for which the rational expression is undefined:  $\frac{x^2-9}{x^2-4x-12}$

Simplify for problems 3 – 6.

3)  $\frac{12x^5y^6}{18x^8y^4}$       4)  $\frac{4x-24}{x^2-x-30}$       5)  $\frac{m-5}{5-m}$       6)  $\frac{x^2-3x-4}{3x^2-10x-8}$

Multiply and simplify for problems 7 – 9.

7)  $\frac{4x^3}{x-2} \cdot \frac{3x-6}{16x}$       8)  $(n-3) \cdot \frac{n^2+4n}{n^2-5n+6}$       9)  $\frac{m^2-1}{m^2-2m+1} \cdot \frac{9m-9}{m^2+4m+3}$

Divide and simplify for problems 10 – 12.

10)  $\frac{3t^3}{8t-16} \div \frac{12t}{t^2-2t}$       11)  $\frac{x^2+x}{2x^3} \div \frac{x^2-2x-3}{8x}$       12)  $\frac{x^2-25}{4x^2} \div \frac{x^2+2x-35}{2x^2+20x+42}$

Add and simplify for problems 13 – 15.

13)  $\frac{2x-15}{x+3} + \frac{9-4x}{x+3}$       14)  $\frac{x+y}{x^2y} + \frac{2x+y}{xy^2}$       15)  $\frac{3}{4x} + \frac{x+2}{3x+2}$

Subtract and simplify for problems 16 – 17.

16)  $\frac{2x+6}{x-2} - \frac{3x-5}{x-2}$       17)  $\frac{2x+4y}{5xy^2} - \frac{5x-3}{x^2y}$

Solve for problems 18 – 20.

18)  $\frac{3}{x} - \frac{1}{4} = \frac{1}{2}$       19)  $\frac{3}{x+4} = \frac{1}{x-1}$       20)  $x + \frac{6}{x} = -7$

21) To estimate the harbor seal population in Bristol Bay, scientists radio-tagged 33 seals.

Several days later, they collected a sample of 40 seals, and 24 of them were tagged. Estimate the seal population of Bristol Bay.

22) A sample of 30 radios contained 4 defective ones. How many defective radios would you expect to find in a batch of 540?

23) A car travels approximately 204 miles on 4 gallons of gas. Find the amount of gas required for a 714-mile trip.

Solve the system of equations by graphing for problems 24 – 25. (You must show your graph on the exam.)

24)  $2x + y = 8$   
 $x - y = 7$

25)  $y = -3x + 1$   
 $y = 3 - x$

Solve the system of equations by substitution for problems 26 – 27.

26)  $y = 4 - x$   
 $3x + 4y = 21$

27)  $x = 3y - 1$   
 $-2x + 5y = 4$

Solve the system of equations by elimination for problems 28 – 29.

28)  $x + 2y = -6$   
 $6x - 4y = 28$

29)  $7x + 5y = 2$   
 $8x - 9y = 17$

Solve the system of equations using any method for problems 30 – 32.

30)  $x - 6y = 9$   
 $-2x + 12y = 4$

31)  $x - y = -4$   
 $-3x + 3y = 12$

32)  $5x - 2y = 7$   
 $4x - 3y = 14$

33) A 2-day ticket to an amusement park costs \$78 for children and \$98 for adults. A group of 23 children and adults paid a total of \$1974 for their tickets. How many children and how many adults are in the group?

34) A grocer wants to mix peanuts worth \$2.52 per pound with Brazil nuts worth \$3.80 per pound to make 480 lb of a mixture worth \$3.44 per pound. How many pounds of each type of nut should be used?

35) A yellow taxi recently cost \$2.50 plus \$2.00 per mile. A blue taxi recently cost \$1.75 plus \$2.20 per mile. At what distance will they cost the same?

36) For a lunch meeting, a company ordered a combination of oven-roasted turkey subs at \$6.49 each and veggie subs at \$5.09 each. The order contained a total of 50 subs and cost a total of \$303.50. How many of each type of sub were ordered?

37) In a recent NBA game, a player scored 25 points on a combination of 11 two- and three-point baskets. How many shots of each type were made?