Review for Test #4 over Ch 7

Work all the problems on a separate piece of paper showing all steps.

Find the domain of the following:

1) $\frac{3x^2-27}{x^4-64x}$

2) $\frac{2x+5}{6x^2+19x+10}$

3) $\frac{x^2-25}{2x^2-17x+35}$

4) $\frac{5x-10}{18x^2+32}$

Simplify the following:

5) $\frac{-42x^3y^4z^3}{-7xy^5z^2}$

6) $\frac{x^3-27}{x^4+3x^3-27x-81}$

7) $\frac{m^2-5m+6}{3m^3-2m^2-8m}$

8) $\frac{t^3-5t^2}{3t^3-75t}$

Perform the indicated operations and simplify:

9) $\frac{x+5}{2}+\frac{x-5}{2}$

10) $\frac{2x^2}{x+9}-\frac{162}{x+9}$

11) $\frac{2a^5b^2}{27ac^3d^2}\cdot\frac{9c^2d^2}{16a^2b^3}$

12) $\frac{x}{7(x+3)}-\frac{x}{7(x-4)}$

13) $\frac{3}{x-5}+\frac{2x-3}{x^2-10x+25}$

14) $\frac{6a^2+5a+1}{9a^2+6a+1}\div\frac{a^2-1}{3a^2-2a-1}$

15) $\frac{6x^2-7x+2}{4x^2-4x+1}\cdot\frac{3x^3-12x}{3x^2+4x-4}$

16) $\frac{x}{x^2+2x-15}-\frac{4}{x+5}$

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

18) $\frac{\frac{3x}{x^2-2x+4}-\frac{3}{x+2}}{x-\frac{x^4-2x^2+7x+3}{x^3+8}}$

19) $\frac{3x+3z}{2x^2+3xz-4xz-6z^2}-\frac{x+z}{x^2-4xz+4z^2}$

20) $\frac{x^3+3x^2}{x^2-4x-21}\div\frac{x^3+6x^2+9x}{x^2-7x}$

21) $\frac{x}{x^2-x-2}-\frac{1}{x^2+5x+4}-\frac{3}{x^2+2x-8}$

22) $\frac{x^2-25}{(x-5)^2}\div\frac{x^2+16}{(x+4)^2}$

Solve the following:

23) $\frac{2x+1}{3} - \frac{3x-2}{4} = \frac{x-4}{6}$

24) $\frac{2}{x-6} + \frac{4}{x+6} = \frac{24}{x^2-36}$

25) $\frac{4}{x-3} + \frac{5}{x+2} = \frac{9}{x+1}$

26) $\frac{x+4}{x-5} - \frac{1}{x+5} = \frac{10}{x^2-25}$

27) $\frac{x}{6x^2-x-12} - \frac{1}{8x^2-10x-3} = \frac{2}{12x^2+19x+4}$

28) $\frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{f}$ for f_1

29) $\frac{4}{x^2-16} - \frac{6}{x^2+x-12} = \frac{-2}{x^2-7x+12}$

30) $S = \frac{a+2b}{3b}$ for b

31) $\frac{3x-2}{5} = \frac{4x}{7}$

32) $\frac{x-3}{-0.5} = \frac{2x-24}{2x}$

Set-up the equation and solve the following:

33) One integer is four less than five times another. The sum of their reciprocals is $\frac{2}{3}$. What are the integers?

34) Two planes leave an airport going at the same rate. If the first plane flies 1.5 hours longer than the second plane and travels 2700 miles while the second plane travels only 2025 miles, how long were the planes flying?

35) Given $\Delta ABC \sim \Delta ZWT$, AB is six less than twice WZ, ZT is five more than WZ, and AC = 21 in, find WZ.

36) Rose took a canoeing trip, traveling 12 miles upstream against a 3 mph current and then returning to the same point downstream. If the total trip took 7.5 hours, how fast can she paddle in still water?

37) Maria can paint a small house in 6 hours working alone. Juan paint the same house in 12 hours. If they work together, how long will it take them to paint the house?

38) A tree casts a shadow of 34 feet at the same time a 3 - foot child casts a shadow of 1.7 feet. What is the height of the tree?

39) A faucet can fill a bathtub in ten minutes while a drain can empty the same bathtub in 15 minutes. If Marigold leaves open the faucet and the drain, how long will it take to fill the bathtub?

Set-up the equation and solve the following:

40) On a map, $\frac{3}{4}$ inch equals 150 miles. If two cities are $3\frac{7}{8}$ inches apart on the map, how far apart are they in real life?

41) A Park Ranger catches and tags 103 Red-Tailed Squirrels. A week later, she catches 42 Red-Tailed Squirrels and finds that 17 of those are tagged. Estimate the population.

42) Juanita and LaTonya can make a quilt in 8 hours working together. If Juanita takes 12 hours longer to make the quilt working alone than LaTonya, how would it take each of them to make a quilt working alone?

Answers:

1) {x| x is a real number; $x \neq 0$ and $x \neq 4$} 2) {x| x is a real number; $x \neq -\frac{5}{2}$ & $x \neq -\frac{2}{3}$}

3) {x| x is a real number; $x \neq 3.5$ and $x \neq 5$} 4) {x| x is a real number}

5) $\frac{6x^2z}{y}$ 6) $\frac{1}{x+3}$ 7) $\frac{m-3}{m(3m+4)}$ 8) $\frac{t}{3(t+5)}$ 9) x 10) $2(x-9)$

11) $\frac{a^2}{24bc}$ 12) $\frac{-x}{(x+3)(x-4)}$ 13) $\frac{5x-18}{(x-5)^2}$ 14) $\frac{2a+1}{a+1}$ 15) $\frac{3x(x-2)}{2x-1}$

16) $\frac{-3(x-4)}{(x+5)(x-3)}$ 17) x^2+3 18) $\frac{12}{2x+3}$ 19) $\frac{(x-9z)(x+z)}{(x-2z)^2(2x+3z)}$

20) $\frac{x^2}{(x+3)^2}$ 21) $\frac{x-1}{(x-2)(x+4)}$ 22) $\frac{(x+5)(x+4)^2}{(x-5)(x^2+16)}$ 23) {6}

24) { } or No Solution 25) $\{-4\frac{3}{11}\}$ 26) {– 3} 27) $\{\frac{1}{2}, 1\}$

28) $f_1 = \frac{ff_2}{f_2-f}$ 29) { } or No Solution 30) $b = \frac{a}{3s-2}$ 31) {14} 32) $\{-\frac{3}{2}, 4\}$

33) The integers are 2 & 6.

34) The 1st plane flew for 6 hours; the 2nd plane flew for 4.5 hours. 35) WZ = 10 in

36) She can paddle 5 mph. 37) It will take 4 hours. 38) The tree is 60 feet tall.

39) It will take 30 minutes. 40) They are 775 miles apart.

41) There are ≈ 254 Red-Tailed Squirrels. 42) It takes Juanita 24 hr. & LaTonya 12 hr.