Name: _____ Per ___ **Show work!** Ch. 1 extra practice

Questions 1 through 4 refer to the following:

Find the domain of the given rational function.

1) $f(x)=\frac{x^2+1}{x+1}$

2) $f(x)=\frac{x}{2x-6}$

3) $f(x)=\frac{x^2+1}{x^2-1}$

4) $f(x)=\frac{x-3}{x^2+3x+2}$

5) Simplify: $\left(\frac{y-2x}{y-x}\right)\left(\frac{y^2-x^2}{2x^2+xy-y^2}\right)$

6) Simplify: $\left(\frac{x^2-4}{10x}\right)\left(\frac{5x^2}{x^2+2x}\right)$

7) Simplify: $\frac{y^2-81}{(y-9)^2} / \frac{5y+45}{4y-36}$

8) Simplify: $\frac{9-x^2}{x^2} / \frac{3+x}{x^3}$

9) Expressed in simplest form, $\frac{x-7}{6}-\frac{3x-2}{12}$ is equivalent to

A) $\frac{-x-16}{12}$ C) $\frac{-x-12}{12}$

B) $\frac{2x+9}{6}$ D) $\frac{2x+5}{6}$

10) Expressed in simplest form, $\frac{5x+3}{x}-\frac{x-1}{2x}$ is

A) $\frac{9x-5}{2x}$ C) $\frac{4x+4}{3x}$

B) $\frac{2x+2}{x}$ D) $\frac{9x+7}{2x}$

11) Expressed as a single fraction, $\frac{5}{x-3}-\frac{1}{x}$ is equivalent to

A) $\frac{6x-3}{x^2-3x}$ C) $\frac{4}{x^2-3x}$

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

12) The expression $\frac{x}{x-1}+\frac{x}{x+1}$ is equivalent to

A) $\frac{2x}{x^2-1}$ C) 1

B) $\frac{2x^2}{x^2-1}$ D) -2

13) Simplify: $\frac{c^3-c}{4c+4}$

14) Simplify: $\frac{2y}{6y^2-10y}$

15) Simplify: $\frac{2x^2-18}{(x+3)^2}$

16) Simplify: $\frac{24y^2-2y-1}{6y+1}$

17) Simplify: $\frac{x^3+27}{x+3}$ see 1.3 notes to factor

18) Simplify: $\frac{y^3-8}{y-2}$

19) Simplify: $(3x)(4x)^2$

20) Simplify: $(3a^2)^3$ no work okay

21) Simplify: $(-3np)(4n^2p^2)$ no work okay

22) Simplify: $(x^n)^3(-5x^n)^2$

CHECK ANSWERS #1-22 *(listed in random order)*

$x \neq -2$ and -1 $x \neq -1$ $x \neq \pm 1$ $x \neq 3$

B B C D -1 $4y-1$ y^2+2y+4

$-12n^3p^3$ $25x^{5n}$ $27a^6$ $48x^3$ $x(3-x)$ x^2-3x+9

$\frac{4}{5}$ $\frac{1}{3y-5}$ $\frac{2(x-3)}{x+3}$ $\frac{x-2}{2}$ $\frac{c(c-1)}{4}$

23) Simplify: $\frac{2^8}{2^4}$

24) Simplify: $\frac{4x^7}{2x^3}$

25) Simplify: $\frac{-x^4}{x^2}$

26) Simplify: $\frac{27a^3b^2c}{-3abc}$

27) Simplify: $\frac{3y^{b+1}}{3y}$

28) Simplify: $\frac{5x^{2a}}{-x^a}$

29) Simplify: $\frac{-12x^{y+1}}{6x}$

30) Simplify: $(a^x b^y)^2$

31) Simplify: $(3^a)^2(3^{a+4})$

32) Simplify and express with positive exponents: $4x^{-2}$

33) Simplify and express with positive exponents: $\frac{3}{4x^{-3}}$

34) Simplify and express with positive exponents: $\frac{3}{(2x)^{-3}}$

35) Simplify and express with positive exponents: $\frac{xy^{-3}}{x^2y^{-2}}$

Show work!!

okay if circled

work

no

36) Simplify and express with positive exponents: $(2x^{-3})^{-2}$

37) Evaluate: $\frac{2^{-3}+3^{-2}}{8^{-1}}$

38) Simplify: $(5y)^0$

39) Simplify: $3x^0$

40) Simplify: $(3x-1)^0$

41) Simplify: $3+5^0$

42) Simplify: -3^{-3}

43) Simplify: -4^{-2}

44) Solve: $5^x = \frac{1}{125}$

45) If $3^x = \frac{1}{9}$, what is the value of x?

46) Express with rational exponents: $\sqrt[3]{9}$

47) Express with rational exponents: $\sqrt{3x}$

48) Express with rational exponents: $\sqrt[4]{3a}$

49) Express with rational exponents: $\sqrt[3]{x^2y^4}$

50) Simplify: $\sqrt{x^6}$

51) Simplify: $\sqrt[3]{a^{12}}$

52) Simplify: $\sqrt[3]{-8x^6y^3}$

CHECK ANSWERS #23-35 *(listed in random order)*

$\frac{1}{xy}$ $\frac{3x^3}{4}$ $\frac{4}{x^2}$ $-9a^2b$ $a^{2x}b^{2y}$ y^b 3^{3a+4}

$-5x^a$ $-2x^y$ $-x^2$ 2^4 $2x^4$ $24x^3$

CHECK ANSWERS #36-52

(listed in random order)

$-\frac{1}{27}$ $-\frac{1}{16}$ $\frac{17}{9}$ $\frac{x^6}{4}$

-3 -2 1 1 3 4

a^4 $(3a)^{\frac{1}{4}}$ $(3x)^{\frac{1}{2}}$ x^3

$-2x^2y$ $x^{\frac{2}{3}}y^{\frac{4}{3}}$ $9^{\frac{1}{3}}$