5.5, 5.6, 5.8 Quiz Review

Name: _____

Date: _____ Block: _____

Solve each equation.

1) $12 + \frac{2}{3x} = 6$

2) $x - \frac{1}{x} = \frac{35}{x}$

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

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

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

6) $\frac{4}{n+1} + \frac{1}{n^2-5x-6} = \frac{1}{n-6}$

Simplify each expression.

7) $\sqrt[3]{343x^9}$

8) $\sqrt[5]{\frac{x^5}{32}}$

9) $\sqrt[2]{\frac{x^8y^4}{10}}$

Write each expression in radical form and simplify.

10) $81^{\frac{3}{2}}$

11) $243^{\frac{2}{5}}$

12) $(-8)^{\frac{4}{3}}$

Write each expression using rational exponents.

13) $\sqrt[5]{10^2}$

14) $\sqrt[4]{15^3}$

15) $\sqrt[5]{8^3}$

Simplify each expression.

16) $8^{\frac{1}{2}} \cdot 8^{\frac{5}{2}}$

17) $\dfrac{4^{\frac{7}{2}}}{4^{\frac{1}{2}}}$

18) $(100^{\frac{1}{2}})^3$

Solve each equation.

19) $\sqrt{2x + 10} = 10$

20) $\sqrt{4x + 4} = 2\sqrt{4x - 9}$

21) $3\sqrt[3]{x} = \sqrt[3]{7x + 40}$

22) $\sqrt{2x + 48} = x$

23) $x + 6 = \sqrt{4x + 21}$

24) $(3x - 5)^{\frac{1}{2}} = 4$

25) $(x - 4)^{\frac{1}{3}} = -2$

26) $(8x - 7)^{\frac{1}{2}} = x$

27) $2x + 5 = \sqrt{4x + 10}$

Solve each inequality.

28) $\sqrt{x - 7} < 3$

29) $\sqrt{3x + 1} + 2 \leq 6$

30) $\sqrt{2x - 3} > 5$

Application Problems:

31) Fran can clean the garage in 3 hours, but it takes Angie 4 hours to do the same job. How long would it take them to clean the garage if they worked together?

32) Gary can row 5 miles per hour in still water. It takes him as long to row 4 miles upstream as 4 miles downstream. It takes 2 hours total. How fast is the water's current?

33) A boat goes 240 miles downstream in the same time it can go 160 miles upstream. The speed of the current is 5 miles per hour. It takes 18 hours total. What is the speed of the boat in still water?

34) Kent can paint a certain room in 6 hours. Together, Kent and his friend Kendra can paint the room in 4 hours. How long would it take Kendra to paint the room?

35) Caroline is gets on a plane that flies 910 miles to Chicago. The speed of the plane of the plane in still air is 305 miles per hour. It takes 6 hours to fly there and back. What is the speed of the wind?