

PAP Algebra 2
Chapter 9 Test Review

Name _____

Simplify the following expressions.

1. $\frac{x-2}{x^2+7x-18} \div \frac{x^3-6x^2-27x}{x^2+12x+27}$

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

3. $\frac{x+5}{4x-16} \cdot \frac{2x^2-32}{x^2-25}$

4. $\frac{3x^2+13x+4}{x^2-4} \div \frac{4x+16}{x+2}$

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

Solving: Identify excluded solutions

$$6. \frac{x}{x-1} + x = \frac{4x-3}{x-1}$$

$$7. 1 = \frac{1}{x^2 + 2x} + \frac{x-1}{x}$$

$$8. \frac{3x}{x^2 - x - 20} + \frac{2}{x+4} = \frac{5x}{x-5}$$

Word Problems

9. The number y of boxes of candy a manufacturer sells each month varies inversely with the price x (in dollars). In one month, the manufacturer sells 800 boxes of candy at a price of \$5 per box. Approximately how many boxes of candy will the manufacturer sell at a price \$7 per box?
10. A car travels 120 miles in the same amount of time that it takes a truck to travel 100 miles. The car travels 10 miles per hour faster than the truck. Use the model to find the speed of the truck.

11. Bob can paint a fence in 6 hours and Sam can paint a fence in 10 hours. How long would it take both men to paint 3 fences working together?
12. The equation for the time it takes a boat to travel 40 kilometers round trip going against and then with the current $t = \frac{20}{s-2} + \frac{20}{s+2}$ where s is the boat's average speed (km/h) in still water. Find the total travel time when the average speed of the boat is 18 kilometers per hour.
13. A boat can travel 8 miles an hour in still water. If it can travel 15 miles down a stream in the same time that it can travel 9 miles up the stream, what is the rate of the stream?
14. Jamie, Pria and Paul can paint a room together in 2 hours. If Pria does the job alone she can paint the room in 5 hours. If Paul works alone, he can paint the room in 6 hours. If Jamie works alone, how long would it take her to paint the room?

15. The volume V of a gas varies inversely as the pressure P on it. If the volume is 240 cm^3 under pressure of 30 kg/cm^2 , what pressure has to be applied to have a volume of 160 cm^3 ?

16. The length of a violin string varies inversely as the frequency of its vibrations. A violin string 14 inches long vibrates at a frequency of 450 cycles per second. Find the frequency of a 12 -inch violin string.

17. The manufacturer of cell phones has a fixed cost of \$26,000, plus a cost of \$28 per phone.

Average cost **per** phone equation:

Range:

Find the average cost per phone if the manufacturer produces 1000 phones.

18. Suppose one painter can paint the entire house in twelve hours, and the second painter takes eight hours. How long would it take the two painters together to paint the house?