Algebra II Test Chapter 11 Mr. Pleacher Name _____

I. Multiple Choice

_____ 1. Which represents an inverse variation?

(A) y = 3xz (B) y = 12x (C) $y = \frac{5}{x}$ (D) $y = \frac{x}{5}$

_____ 2. By what should you multiply both sides of the equation to solve

$$\frac{3x}{x^2 - 9} - \frac{5}{x+3} = \frac{1}{2x-6} \quad ?$$

(A) x + 3 (B) $2(x+3)$ (C) $x^2 - 9$ (D) $2(x-3)(x+3)$

_____ 3. Which is a point of discontinuity in the graph of $f(x) = \frac{x^2 - 121}{x - 11}$?

(A) (11, 22) (B) (11, 0) (C) (–11, –22) (D) there are none

_____ 4. Suppose *p* varies inversely as *q*. If $p = \frac{1}{10}$ when $q = 10$, determine *q* when $p = 5$.

(A) 20 (B) $\frac{1}{2}$ (C) $\frac{1}{5}$ (D) none of these

_____ 5. Suppose *n* varies jointly as *e* and *d*. If $n = 120$ when $e = 5$ and $d = 6$, determine *d* when $n = 96$ and $e = 3$.

(A) 1152 (B) 16 (C) 12 (D) 8

_____ 6. Which represents a vertical asymptote of $y = \frac{5}{x+3}$?

(A) x = 3 (B) y = 0 (C) x = –3 (D) y = 5

_____ 7. Suppose *y* varies directly as *x*. If $x = 6$ when $y = 8$, determine *y* when $x = 4$.

(A) 3 (B) $\frac{3}{4}$ (C) $\frac{16}{3}$ (D) $\frac{4}{3}$

II. Simplify each rational expression, stating any **restrictions** on the variables.

_____ 8. $\frac{4a^3b^2c}{7ac^2}$

_____ 9. $\frac{q^2-7q}{q-7}$

_____ 10. $\frac{x-7}{x^2-2x-35}$

III. Perform the indicated operation and simplify.

_____ 11. $\frac{x^2+5x}{x^2-25} \bullet \frac{x^2+3x-10}{x^2-2x}$

_____ 12. $\frac{4f-3}{4f+3} \div \frac{5f-1}{1-5f}$

_____ 13. $\frac{x^3-2x^2-48x}{x^2-36} \div \frac{x^2-64}{x^2-6x}$

_____ 14. $\frac{2y+3}{2y+8} + \frac{y+6}{3y+12}$

_____ 15. $\frac{3}{4x} + \frac{4}{5x} - \frac{5}{6x}$

_____ 16. $\frac{2z+1}{z-5} - \frac{4}{z^2-3z-10}$

IV. Simplify

_____ 17. $\dfrac{\frac{3}{a}+d}{5}$

_____ 18. $\dfrac{\frac{5}{a}-\frac{4}{b}}{\frac{1}{2a}-\frac{1}{2b}}$

_____ 19. $\dfrac{\frac{2k}{k^2+4k+3}}{\frac{1}{k+3}+\frac{2}{k+1}}$

V. Solve and Check.

_____ 20. $\dfrac{6}{5x}+\dfrac{4}{x}=\dfrac{2}{5}$

_____ 21. $\dfrac{t}{t-2}-\dfrac{5}{t-2}=4$

_____ 22. $\dfrac{1}{x-5}+\dfrac{1}{x+5}=\dfrac{6}{x^2-25}$

VI. Word Problem

_____ 23. The velocity of a river is 2.5 miles per hour. Moving with the current, a boat can travel 15 miles in the same amount of time that it would take to go 5 miles moving against the current. Determine the boat's rate in still water.