Algebra 2

7-Review

Take this test as you would take a test in class. When you are finished, check your work against the answers.

7-01

Classify the following variations as *direct*, *inverse*, or *neither*.

1. $xy = 16$

2. $x = \frac{y}{3}$

The variables *x* and *y* vary inversely. Use the given values to write an equation relating *x* and *y*. The find *y* when *x* = 10.

3. $x = 2, y = 9$

4. $x = 15, y = -5$

7-02

Find the asymptotes of the given function.

5. $f(x) = \frac{10}{x-4}$

6. $g(x) = -\frac{1}{x+2} + 3$

Graph the function.

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

9. $y = \frac{x+2}{x+1}$

8. $y = \frac{2}{x-1}$

7-03

Perform the indicated operation and simplify.

10. $\frac{2x^2+12x+10}{8x^2+16x-120}$

12. $\frac{x^2-4x-12}{x^2-9} \div \frac{x+2}{x^2-9x+18}$

11. $\frac{x^2+8x+15}{x^2-x-12} \cdot \frac{x-4}{x^2+4x-5}$

7-04

Find the least common multiple of the polynomials.

13. $10x(x + 2)(x - 1)$ and $15x(x + 3)(x - 1)$

14. $x^2 + x - 2$ and $x^2 - x - 6$

Perform the indicated operation and simplify.

15. $\frac{x}{x+3} - \frac{5x+4}{x^2+3x}$

16. $\frac{3x}{6(x+1)} + \frac{9}{18(x+1)}$

17. Simplify the complex fraction.

$$\frac{\dfrac{4}{x+1}}{\dfrac{5}{x+1} + \dfrac{3}{x^2+x}}$$

7-05

Solve the equation. Check for extraneous solutions.

18. $\frac{2x}{x^2-4} = \frac{5}{x-2}$

20. $\frac{3}{x} + \frac{4}{x+10} = \frac{5}{x+10}$

19. $\frac{2}{x+10} = \frac{5}{x+11}$

21. $\frac{2x}{x+1} + \frac{3}{x+2} = \frac{5x}{x+1}$

22. A factory will begin making chairs. The startup costs are $20,000 for the machines to make the chairs. The materials and labor cost $15 for each chair. Write an equation that gives the average cost per chair as a function of the number of chairs made. How many chairs will have to be made to have an average cost of $30?
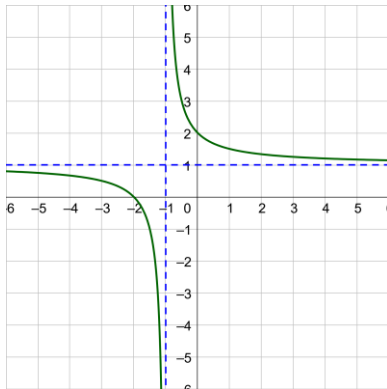
Answers

1. Inverse

2. Direct

3. $y = \frac{18}{x}; y = \frac{9}{5}$

4. $y = -\frac{75}{x}; y = -\frac{15}{2}$

5. VA: $x = 4$; HA: $y = 0$

6. VA: $x = -2$; HA: $y = 3$
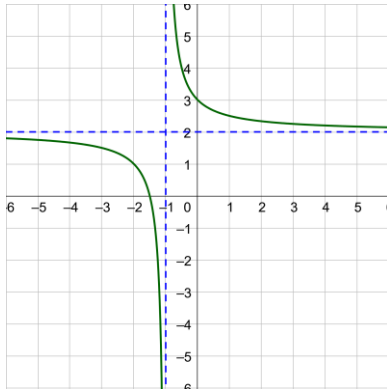
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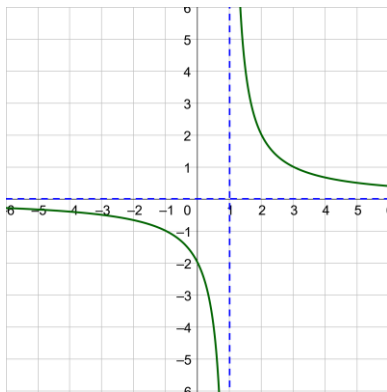
8.

9.

10. $\frac{x+1}{4(x-3)}$

11. $\frac{1}{x-1}$

12. $\frac{(x-6)^2}{x+3}$

13. $30x(x-1)(x+2)(x+3)$

14. $(x+2)(x-1)(x-3)$

15. $\frac{x^2-5x-4}{x(x+3)}$

16. $\frac{1}{2}$

17. $\frac{4x}{5x+3}$

18. $-\frac{10}{3}$

19. $-\frac{28}{3}$

20. -15

21. $\frac{-1 \pm \sqrt{5}}{2}$

22. $C = \frac{15x+20000}{x}; 1,333 \; chairs$