

East Los Angeles College
Department of Mathematics
Math 245
Test 3 Study Guide

Simplify the following rationals.

1. $\frac{x-4}{x^3-64}$

2. $\frac{4x^2-4x+1}{6x^2+5x-4}$

Multiply or Divide the Following rationals.

3. $\frac{x^2+2x-15}{x^2+11x+30} \cdot \frac{x^2+2x-15}{x^2-8x+15}$

4. $\frac{2x^2+5x-12}{5x-10} \div \frac{x^2-4x+4}{5x+20}$

Add or Subtract the following rationals.

5. $\frac{2}{x+4} + \frac{5}{x}$

6. $\frac{x}{x+2} - \frac{3}{x-1}$

7. $\frac{x}{x^2+2x+1} + \frac{1}{x^2+5x+4}$

8. $\frac{x}{x^2+9x+20} - \frac{4}{x^2+7x+12}$

Evaluate the following complex rationals.

9. $\frac{\frac{x-3}{6} \cdot \frac{x}{1}}{\frac{1}{3} + \frac{1}{x}}$

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

11. $\frac{\frac{x-y}{1} \cdot \frac{1}{1}}{y^3 \cdot x^3}$

12. $\frac{\frac{5}{x} \cdot \frac{2}{x^2}}{\frac{2}{x^2}}$

Solve the following rational equations.

13. $\frac{7}{x^2} + \frac{19}{x} = 6$

14. $\frac{x+4}{2x} = \frac{x-1}{3}$

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

16. $\frac{-3x}{2} + \frac{9x-5}{3} = \frac{11x+6}{6x}$

17. $\frac{3}{x-2} + \frac{1}{x+2} = \frac{12}{x^2-4}$

18. $6 = \frac{7}{2x-3} + \frac{3}{(2x-3)^2}$

Determine the domain for the following functions. Graph, write in your solution in set notation and interval notation.

19. $f(x) = \sqrt{2x^3 - 7x^2 - 30x}$

20. $f(x) = \frac{10}{x^3-49x}$

21. $f(x) = \sqrt{1-x^2}$

22. $f(x) = \frac{1}{\sqrt{1-x^2}}$

23. $f(x) = \frac{1}{\sqrt{x}}$

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

25. $f(x) = \frac{1}{3x-5}$

26. $f(x) = \frac{1}{\sqrt{3x-5}}$