

2.08 Fractions in Review

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ANSWERS TO ALL EXERCISES ARE INCLUDED AT THE END OF THIS PAGE

Congratulations on having completed the skills on fractions. This tends to be a difficult topic for students in that it is quite abstract, and the problems tend to be somewhat long and time consuming. Also, there are many different skills and procedures that are easily confused. Hopefully, you have mastered these skills one at a time. Now, nearing the end of this chapter, it is important to see if you have them all together in a total review of all of these skills. The exercises that follow are presented randomly, and without steps or hints. You may recognize some of them.

EXERCISES. Perform the indicated operations, reducing all answers to lowest terms.

1.
$$\frac{X^2 - 49}{X^2 - 14X + 49}$$

2.
$$\frac{X^3Y^2}{6XY + 12X} \div \frac{Y^3}{Y^2 - 4}$$

3.
$$\frac{5}{24Y} - \frac{8}{9XY^3}$$

4.
$$(X^{-2} - Y^{-2})^{-1}$$

In 5 - 6, solve for X

5.
$$P = \frac{XY}{a + bX}$$

6.
$$\frac{X(X-1)}{6} + \frac{X}{3} = 1$$

$$7. \frac{X^3 - 27}{X^3 + 3X^2 - 9X - 27} \cdot \frac{(X - 3)^3}{X^2 + 3X + 9}$$

$$8. \frac{X^3 - 8}{X^3 - 2X^2 - 2XY + 4Y}$$

$$9. \frac{5}{X^2 - 10X + 25} - \frac{3}{X^2 - 5X}$$

In 10, solve for X:

$$10. \frac{X}{X+4} = \frac{6}{X-4}$$

$$11. \frac{1 + (2X)^{-1}}{2X + (2X)^{-2}}$$

$$12. \frac{X}{X^3 - 8} + \frac{4}{X - 2}$$

In 13, solve for Z:

$$13. \frac{1}{X} = \frac{1}{Y} + \frac{1}{Z}$$

$$14. \frac{8X^2 - 16X}{X^2 - 4X + 4}$$

In # 16, solve for X:

$$15. \frac{X}{X^2 - 25} - \frac{5}{5 - X}$$

$$16. \frac{X}{3} - \frac{X + 2}{2} = 1$$

$$17. \frac{X^2 - 8XY + 16Y^2}{X^2 - 3XY - 10Y^2} \cdot \frac{X^2 - 4Y^2}{X^2 - 5XY + 4Y^2}$$

$$18. \frac{7}{5XY^2} + \frac{8}{45X^4Y^3}$$

$$19. \frac{X^2 - 5X + 25}{X^3 + 125}$$

$$20. (3X^{-1} + 3Y^{-1})^{-1}$$

In #21, solve for X:

$$21. \frac{X}{X-5} + \frac{12}{X-2} = \frac{15}{(X-5)(X-2)}$$

$$22. \frac{X^2 + 4X - 2XY - 8Y}{X^2 - 2X - 2XY + 4Y}$$

$$23. \frac{X}{X^3 - 125} + \frac{10}{X^2 + 5X + 25}$$

$$24. \frac{2X - (2X)^{-1}}{1 + (2X)^{-1}}$$

In 26, solve for X:

$$25. \frac{9X^2 - 4Y^2}{9X^2 - 12XY + 4Y^2} \div \frac{X^2 - 2XY - 8Y^2}{3X^2 - 14XY + 8Y^2}$$

$$26. \frac{X}{X-5} + \frac{10}{X-2} = \frac{15}{(X-5)(X-2)}$$

In #28, solve for b:

$$27. \frac{X(X+1)}{6} - \frac{X}{3} = 1$$

$$28. P = \frac{XY}{a + bX}$$

$$29. \frac{X}{X+4} + \frac{2X}{X^2-4} - \frac{2}{(X+2)(X+4)}$$

$$30. \frac{X^3}{X-3} + \frac{9X}{3-X}$$

In #31, solve for X:

$$31. \frac{X}{X-1} + \frac{2}{X-5} = \frac{-4}{(X-5)(X-1)}$$

$$32. \frac{X^3 - 27}{X^2 - 6X + 9} \cdot \frac{X^2 - 9}{X^2 + 3X + 9}$$

$$33. \frac{X}{X^2 + 4X + 3} - \frac{4}{X^2 - 3X - 4}$$

In #34, solve for a:

$$34. P = \frac{XY}{a + bX}$$

$$35. \quad \frac{2X}{X^2 - 4} - \frac{3}{X^2 + X - 6}$$

$$36. \quad \frac{4}{X} = \frac{X+2}{2}$$

$$37. \quad \frac{X}{X-1} + \frac{5}{X-5} = \frac{-1}{(X-5)(X-1)}$$

$$38. \quad \frac{X^3}{X-4} + \frac{64}{4-X}$$

$$39. \quad \frac{1}{X^2-4X+3} - \frac{1}{X^2+4X-5} = \frac{1}{X^2+2X-15}$$

$$40. \quad \frac{1}{F} = \frac{1}{S} + \frac{1}{U}, \text{ for } S$$

ANSWERS 2.08

p.210-215:

$$1. \frac{X+7}{X-7} ; 2. \frac{X^2(Y-2)}{6Y} ; 3. \frac{15XY^2-64}{72XY^3} ; 4. \frac{X^2Y^2}{Y^2-X^2} ; 5. \frac{Pa}{Y-Pb} ; 6. -3, 2;$$

$$7. \frac{(X-3)^3}{(X+3)^2} ; 8. \frac{X^2+2X+4}{X^2-2Y} ; 9. \frac{2X+15}{X(X-5)^2} ; 10. 12, -2; 11. \frac{2X}{4X^2-2X+1} ;$$

$$12. \frac{4X^2+9X+16}{X^3-8} \text{ or } \frac{4X^2+9X+16}{(X-2)(X^2+2X+4)} ; \quad 13. \frac{XY}{Y-X} ; \quad 14. \frac{8X}{X-2} ; \quad 15. \frac{6X+25}{(X-5)(X+5)} ;$$

$$16. -12 ; \quad 17. \frac{(X-4Y)(X-2Y)}{(X-5Y)(X-Y)} ; \quad 18. \frac{63X^3Y+8}{45X^4Y^3} ; \quad 19. \frac{1}{X+5} ; \quad 20. \frac{XY}{3(Y+X)} ;$$

$$21. -15 \text{ (Reject 5)} ; \quad 22. \frac{X+4}{X-2} ; \quad 23. \frac{11X-50}{(X-5)(X^2+5X+25)} ; \quad 24. 2X-1 ;$$

$$25. \frac{3X+2Y}{X+2Y} ; \quad 26. -13 \text{ (Reject 5)} ; \quad 27. 3, -2 ; \quad 28. \frac{XY-Pa}{PX} ; \quad 29. \frac{X^2+2}{(X+4)(X-2)} ;$$

$$30. X(X+3) ; \quad 31. 2 \text{ (Reject 1)} ; \quad 32. X+3 ; \quad 33. \frac{X^2-8X-12}{(X+3)(X+1)(X-4)} ;$$

$$34. \frac{XY-PbX}{P} ; \quad 35. \frac{2X^2+3X-6}{(X-2)(X+2)(X+3)} ; \quad 36. -4, 2 ; \quad 37. 2, -2 ; \quad 38. X^2+4X+16 ; \quad 39.$$

$$9 ; \quad 40. \frac{UF}{U-F} .$$

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