

The Weekly Rigor

No. 203

“A mathematician is a machine for turning coffee into theorems.”

May 12, 2018

24 Problems in Multiplying and Dividing Rational Expressions

(Part 1)

PROBLEMS

Multiply or divide the following rational expressions and express the answer with the least factors.

1. $\frac{3}{4} \cdot \frac{5}{7}$

2. $\frac{20}{60} \div \frac{3}{2}$

3. $\frac{5}{x} \div \frac{x}{3}$

4. $\frac{8x^3}{27y^8} \cdot \frac{9y^3}{12x^2}$

5. $\frac{x-3}{x^2-4} \cdot \frac{x+2}{x^2-6x+9}$

6. $\frac{7n^3+28n^2}{n^2+n-12} \cdot \frac{n-3}{n^2+14n+48}$

7. $\frac{\frac{2p+12}{4}}{\frac{2p-6}{p-3}}$

8. $\frac{7n}{24n^3-64n^2} \cdot \frac{9n-24}{7n}$

9. $\frac{x+7}{7x+35} \cdot \frac{x^2-3x-40}{x-8}$

10. $\frac{\frac{20a^2-100a}{a-1}}{\frac{16a^3-80a^2}{1}}$

11. $\frac{3b^2+18b}{b+6} \cdot \frac{1}{b+8}$

12. $\frac{x^2-10x+25}{10x-100} \div \frac{45-9x}{x-10}$

13. $\frac{45x^2}{x-9} \cdot \frac{x^2-5x-36}{3x^3+12x^2}$

14. $\frac{\frac{m^2-1}{3m-15}}{\frac{m^2-9m-10}{8m-80}}$

15. $\frac{\frac{1}{4} + \frac{5}{4}}{4}$

16. $\frac{\frac{16}{m-1}}{\frac{16}{5} - \frac{16}{25}}$

17. $\frac{\frac{25}{18} + \frac{x+1}{36}}{\frac{1}{1} - \frac{x+1}{36}}$

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

19. $\frac{\frac{1}{3+h} - \frac{1}{3}}{h}$

20. $\frac{\frac{1}{7+h} - \frac{1}{7}}{h}$

21. $\frac{\frac{1}{x+h} - \frac{1}{x}}{h}$

22. $\frac{\frac{1}{5(x+h)} - \frac{1}{5x}}{h}$

23. $\frac{\frac{1-(x+h)}{2+(x+h)} - \frac{1-x}{2+x}}{h}$

24. $\frac{\frac{1}{x+\Delta x} - \frac{1}{x}}{\Delta x}$

“Only he who never plays, never loses.”