4.1 HW: Simplifying Rational Expressions

1. The length of a rectangular prism is 9 more than the width. The volume is $w^3 + 8w^2 - 9w$. What is the *simplified* expression for the height of the prism?

2. Write a rational expression that has 4 and -3 as excluded values.

3. A square has a side length of $x + 4$. A rectangle with a height of $2x + 8$ has the same area as the square. Write an expression for the length of the rectangle.

Simplify and state the excluded values.

4. $\dfrac{k+3}{k^2+8k+15}$

5. $\dfrac{x^2+2x+1}{x+1}$

6. $\dfrac{n-2}{n^2 - 7n + 10}$

7. $\dfrac{20n^2 + 12n}{12n}$

8. $\dfrac{6b^2 - 14b}{4b^2 + 6b}$

9. $\dfrac{b^2 + b - 12}{b^2 - 9b + 18}$

10. $$\frac{9m - 27}{m^2 - 11m + 24}$$

11. $$\frac{n^2 + 6n + 9}{n^2 + 9n + 18}$$

12. $\dfrac{21p^2 + 35p}{21p^2 - 28p}$

13. $\dfrac{r^2 - 6r + 9}{r^2 - 10r + 21}$

14. $\dfrac{n^2 - 36}{n^2 - n - 42}$

15. $\dfrac{k^2 + 14k + 48}{k^2 - 4k - 60}$

16. $\dfrac{18x^3 + 30x^2 + 12x}{42x^3 + 90x^2 + 12x}$

17. $\dfrac{2x + 16}{5x^3 + 39x^2 - 8x}$

Perform the following operations.

18. $\dfrac{1}{3} \cdot \dfrac{2}{5}$

19. $\dfrac{11}{5} \div 2$

20. $\dfrac{3}{4} + \dfrac{2}{3}$

21. $\dfrac{8}{12} - \dfrac{3}{8}$

STOP!