

Graded Homework 7

1. If $y = f(x) = \frac{x}{x+5}$ find: (see section 7.1)

a. $f(4)$

b. $f(-1)$

c. $f(0)$

2. In problem 1 above, what value of x will make the function undefined?

3. Reduce the fraction $12/18$ to lowest terms.

4. Reduce the fraction $\frac{x^2-3x}{6x-18}$ to lowest terms by factoring. (see section 7.2)

5. In probability, a die (single dice) shows the numbers 1, 2, 3, 4, 5, and 6. If each number has an equal chance of appearing on any given roll of the die, what is the probability that a 2 or a 4 will appear on the top of the die when rolled? (a fraction is the answer)

6. Consider the two fractions:

a. $\frac{x-5}{x-5}$ and b. $\frac{5-x}{x-5}$

Which of these is equal to -1 and which is equal to +1?

Simplify the following rational fractions: (see section 7.2)

7. $\frac{z+3}{z+4} \cdot \frac{z+4}{z-7}$

8. $\frac{x^2-1}{x^2-4} \cdot \frac{x-2}{x-1}$

9. $\frac{2}{x} \div \frac{2x+3}{x}$

10. $\frac{4}{2t^3} \div \frac{8}{t^2}$

Add or subtract as indicated: (see section 7.3)

11. $\frac{y+3}{y-3} + \frac{2y-12}{y-3}$

$$12. \frac{5x}{2x+3} - \frac{3x-3}{2x+3}$$

$$13. \frac{x}{2x-5} - \frac{1}{2x-5} + \frac{2x+1}{2x-5}$$

$$14. \frac{1}{5k-1} + \frac{1}{1-5k}$$

Simplify the expression using fractions, no calculators: (see section 7.4 and 7.5)

$$15. \frac{4}{5} - \frac{1}{2}$$

$$16. \frac{1}{3x} + \frac{3}{4x}$$

$$17. \frac{1}{x} - \frac{1}{y}$$

$$18. \frac{1}{xy} - \frac{4x}{y}$$

$$19. \frac{1}{x+2} - \frac{1}{x^2+2x}$$

20. The formula $I = \frac{8}{d^2}$ approximates the intensity of light from a 100-watt light bulb at a distance of d meters, where I is in watts per square meter. For light from a 40-watt bulb the equation of intensity becomes $= \frac{16}{5d^2}$.

- Find an expression for the sum of the intensities of light from the two light bulbs.
- Find the combined intensity of their light at $d = 5$ meters.

Simplify the complex fractions:

$$21. (8/9)/(5/4)$$

$$22. \frac{\frac{2y}{2y-1}}{\frac{1}{4y^2-1}}$$

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

24. A student simplifies a complex fraction as shown below. Explain the student's mistake and how you would simplify the complex fraction correctly.

$$\left(\frac{\frac{1}{x} + 1}{\frac{1}{x}} \right) = \left(\frac{\frac{1}{x}}{\frac{1}{x}} \right) + 1 = 2.$$