Name: _____ Date: _____

1. Find the domain of the given function.
$$-\frac{4x}{x+2}$$
A) $(-\infty,0)\cup(0,\infty)$
B) $(-\infty,-2)\cup(-2,\infty)$
C) $(-\infty,-2)\cup(2,\infty)$
D) $(-\infty,\infty)$

2. Reduce the given expression to lowest terms.
$$\frac{12}{66}$$
A) $\dfrac{12}{66}$

B) $\dfrac{6}{11}$

C) $\dfrac{2}{11}$

D) $\dfrac{4}{22}$

3. Find the solution set of the given equation. Match your result to the correct answer below.
$$\frac{5}{x}=\frac{4}{3}$$
A) $\left\{\dfrac{15}{4}\right\}$

B) $\left\{\dfrac{4}{15}\right\}$

C) $\{4\}$
D) $\{3\}$

4. Convert the given expression into an equivalent expression that has the indicated denominator. Match your result to the correct answer below.

$$\frac{1}{3}, \frac{?}{60}$$

A) $\dfrac{9}{60}$

B) $\dfrac{20}{60}$

C) $\dfrac{10}{60}$

D) $\dfrac{15}{60}$

5. Find the indicated value for the given rational expression. Match your result to the correct answer below.

$$R(x) = \frac{8x-5}{x-3}, R(-2)$$

A) $\dfrac{21}{5}$

B) $-\dfrac{11}{5}$

C) $\dfrac{11}{5}$

D) -21

6. Perform the indicated operations and write your result *in lowest terms*. Match your result to the correct answer below.

$$\frac{5y+5}{10} \cdot \frac{y}{5y^2+5y}$$

A) 2

B) $\dfrac{1}{5}$

C) $\dfrac{5y^2+5y}{50y^2+50y}$

D) $\dfrac{1}{10}$

7. Perform the indicated operations and write your result *in lowest terms*. Match your result to the correct answer below.

$$\frac{x^3-8}{(x-2)^2}\cdot\frac{x^2-4}{x^2+2x+4}$$

A) $x+2$

B) $\dfrac{x^3-8}{(x-2)^2}\cdot\dfrac{x^2-4}{x^2+2x+4}$

C) $\dfrac{x^2-4}{x-2}$

D) $\dfrac{x^3-8}{x^2+2x+4}$

8. Reduce the expression to lowest terms and match your result to the correct answer below.

$$\frac{3x-5}{5-3x}$$

A) 1

B) 0

C) -1

D) $\dfrac{5-3x}{3x-5}$

9. Perform the indicated operations and write your result in lowest terms. Match your result to the correct answer below.

$$\frac{6x^3y^4}{z^5}\div\frac{15x^2y}{4z^4}$$

A) $\dfrac{45x^5y^5}{2z^9}$

B) $\dfrac{xy^3}{10z^9}$

C) $\dfrac{8xy^3}{5z}$

D) $\dfrac{x^5y^5}{10z}$

10. Perform the indicated operations and write your result in lowest terms. Match your result to the correct answer below.

$$\frac{6z-3}{z^2+5z} \div \frac{2z^2-3z+1}{z^2+4z-5}$$

A) $\dfrac{3}{z}$

B) $\dfrac{6z-3}{z}$

C) $\dfrac{3}{z^2+25}$

D) $\dfrac{3}{z-1}$

11. Find the least common multiple of the given terms. Match your result to the correct answer below.

$$4x^2y^3, 6xy^4$$

A) $12x^2y^4$

B) $24x^3y^7$

C) $24x^2y^4$

D) $12x^3y^4$

12. Perform the indicated operations and write your result in lowest terms. Match your result to the correct answer below.

$$\frac{4}{x^2y} - \frac{5}{xy^2}$$

A) $-\dfrac{1}{xy}$

B) $\dfrac{4y-5x}{x^2y^2}$

C) -1

D) $\dfrac{4xy^2-5x^2y}{x^2y^2}$

13. Perform the indicated operations and write your result in lowest terms. Match your result to the correct answer below.

$$\frac{5}{x} + \frac{2}{9}$$

A) $\dfrac{7}{x+9}$

B) $\dfrac{2x+45}{x}$

C) $\dfrac{47}{9x}$

D) $\dfrac{2x+45}{9x}$

14. Bob and Jill own a furniture re-upholstering business. Jill can re-upholster a love seat in *x* hours, whereas it takes Bob *x* + 2 hours to do the same job. Write an expression for the number of love seats Bob and Jill can complete while working together for a 40 hour week. Match your result to the correct answer below.

A) $\dfrac{40x+40}{x^2+2x}$

B) $\dfrac{80x+80}{x^2+2x}$

C) $80x+80$

D) $\dfrac{x+1}{20}$

15. Simplify: $\dfrac{\dfrac{2}{a}+b}{\dfrac{a}{b}+\dfrac{3}{a}}$

A) $\dfrac{b^2+5b+6}{a^2+3a}$

B) $\dfrac{a^2b^2+2a^2+6b}{a^3+3ab}$

C) $\dfrac{4ab+2}{a^2b}$

D) $\dfrac{ab^2+2b}{a^2+3b}$

16. Cara spent the same amount for pistachios the past three weeks. The first week, pistachios were $3.50 per pound. The second week, they were $3.75 per pound and the third week they were $4.25 per pound. What was the average price for the three purchases? Round to the nearest cent.
    A) $3.83
    B) $3.81
    C) $3.85
    D) $3.79

17. Find the solution to the given equation. Match your result to the correct answer below.
    $$\frac{1}{x}+\frac{1}{5}=\frac{1}{6}$$
    A) $\{-30\}$

    B) $\{1\}$

    C) $\{-15\}$

    D) $\varnothing$

18. Find the solution to the given equation. Match your result to the correct answer below.
    $$\frac{5}{x+5}+\frac{x}{x+3}+\frac{1}{x^2+8x+15}=0$$
    A) $\{-4,-3\}$

    B) $\{-5,1\}$

    C) $\{-8,-2\}$

    D) $\varnothing$

19. Solve $E=\dfrac{h^2n^2}{8ma}$ for a.

    A) $a=\dfrac{h^2n^2}{8mE}$

    B) $a=8h^2n^2mE$

    C) $a=\dfrac{8mE}{h^2n^2}$

    D) $a=\dfrac{h^2n^2E}{8m}$

20. Each day, Amit runs nine miles and then walks one mile. He runs 10 mph faster than he walks. If his total time is 75 minutes, what is Amit's running speed?
A) 10 mph
B) 12 mph
C) 8 mph
D) 2 mph