Practice 14.1, 14.2, 14.3

Name_____

If possible, evaluate the expression at the given value of the variable.

1) $\frac{x}{x + 6}$, $x = -6$

2) $\frac{5x^2 + 8x}{3x}$, $x = -3$

Find any values of the variable that make the expression undefined.

3) $\frac{4y - 5}{y^2 - 36}$

4) $\frac{x^2 - 16}{x^2 + 17x + 72}$

Write the expression in lowest terms.

5) $\frac{(y + 2)(y - 3)}{(y - 3)(y + 9)}$

6) $\frac{4x + 2}{20x^2 + 18x + 4}$

7) $\frac{6x + 18}{8x + 24}$

8) $\frac{m^2 - 9m}{9 - m}$

9) $\frac{s^2 + d^2}{s - d}$

Multiply and reduce to lowest terms.

10) $\frac{7x^2}{3} \cdot \frac{18}{x^3}$

11) $\frac{4p - 4}{p} \cdot \frac{7p^2}{9p - 9}$

12) $\frac{k^2 + 8k + 15}{k^2 + 9k + 18} \cdot \frac{k^2 + 6k}{k^2 - 2k - 35}$

Divide and reduce to lowest terms.

13) $\frac{4x^2}{5} \div \frac{x^3}{25}$

14) $\frac{z^2 - 9}{z} \div \frac{z + 3}{z - 8}$

15) $\frac{y^3 - 3y}{y^2 - 9} \div \frac{y^2 + 4y + 4}{y^2 + 5y + 6}$

Simplify and reduce to lowest terms.

16) $\frac{5}{21} - \frac{1}{21}$

17) $\frac{17}{10x} - \frac{8}{10x}$

18) $\frac{4}{8x^2} + \frac{6}{8x^2}$

19) $\frac{2x + 8}{x^2 + 8x + 15} - \frac{x + 3}{x^2 + 8x + 15}$

20) $\frac{5x}{x + 4} + \frac{7x - 8}{x + 4} - \frac{4x}{x + 4}$

Solve the problem.

21) The farther someone is from a light source, the less intense its light. The equation $I = \frac{21}{4d^2}$ approximates the light intensity from a certain light source at a distance of d meters, where I is measured in watts per square meter. Find I for d = 2 meters and interpret the result.

1) Undefined
2) $-\frac{7}{3}$
3) 6, -6
4) -8, -9
5) $\frac{y+2}{y+9}$
6) $\frac{1}{5x+2}$
7) $\frac{3}{4}$
8) -m
9) Cannot reduce
10) $\frac{42}{x}$
11) $\frac{28p}{9}$
12) $\frac{k}{k-7}$
13) $\frac{20}{x}$
14) $\frac{(z-3)(z-8)}{z}$
15) $\frac{y(y^2-3)}{(y-3)(y+2)}$
16) $\frac{4}{21}$
17) $\frac{9}{10x}$
18) $\frac{5}{4x^2}$
19) $\frac{1}{x+3}$
20) $\frac{8x-8}{x+4}$
21) $\frac{21}{16}$ = 1.3125; the intensity is 1.3125 W/m^2 at 2 m.