Chapter 5.7 and chapter 6 review

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Factor the polynomial completely.

1) $1000p^3 - 1$ 1) _____

A) $(10p - 1)(100p^2 + 1)$
B) $(10p - 1)(100p^2 + 10p + 1)$
C) $(10p + 1)(100p^2 - 10p + 1)$
D) $(1000p - 1)(p^2 + 10p + 1)$

2) $t^3 + 216$ 2) _____

A) $(t - 216)(t^2 - 1)$
B) $(t - 6)(t^2 + 6t + 36)$
C) $(t + 6)(t^2 + 36)$
D) $(t + 6)(t^2 - 6t + 36)$

3) $64a^3 - 27b^3$ 3) _____

A) $(64a - 3b)(a^2 + 12ab + 9b^2)$
B) $(4a - 3b)(16a^2 + 9b^2)$
C) $(4a - 3b)(16a^2 + 12ab + 9b^2)$
D) $(4a + 3b^2)(16a^2 - 12ab + 9b^2)$

4) $128k^3m - 54m^4$ 4) _____

A) $2m(4k + 3m^2)(16k^2 - 12km + 9km^2)$
B) $2m(64k - 3m)(k^2 + 12km + 9m^2)$
C) $2m(4k - 3m)(16k^2 + 12km + 9m^2)$
D) $(8km - 6m^2)(16k^2 + 9m^2)$

Find the domain of the rational function.

5) $f(x) = \dfrac{x - 1}{7x + 8}$ 5) _____

A) $\left\{x \mid x \neq \frac{8}{7}\right\}$
B) $\left\{x \mid x \neq -\frac{8}{7}\right\}$
C) $(-\infty, \infty)$
D) $\left\{x \mid x \neq -\frac{8}{7}, 1\right\}$

6) $g(a) = \dfrac{2a + 22}{a^2 - 9}$ 6) _____

A) $\{a \mid a \neq 3\}$
B) $\{a \mid a \neq 3, -3, -11\}$
C) $\{a \mid a \neq 3, -3\}$
D) $(-\infty, \infty)$

7) $g(c) = \dfrac{2c + 18}{9c^2 + 2c - 7}$ 7) _____

A) $\left\{c \mid c \neq \frac{7}{9}, -1\right\}$
B) $\left\{c \mid c \neq -9, -1, \frac{7}{9}\right\}$
C) $\left\{c \mid c \neq -\frac{7}{9}, 1\right\}$
D) $\left\{c \mid c \neq \frac{9}{7}, -1\right\}$

8) $h(x) = \dfrac{x - 80}{x^3 - 2x^2 - 35x}$ 8) _____

A) $\{x \mid x \neq 0, -5, 7\}$
B) $\{x \mid x \neq 0, -5, 7, 80\}$
C) $\{x \mid x \neq -5, 7\}$
D) $\{x \mid x \neq 0, -7, 5\}$

Write the rational expression in lowest terms.

9) $\frac{3k - 18}{12 - 2k}$ 9) _____

A) $\frac{3}{2}$ B) 1 C) $-\frac{3}{2}$ D) -1

10) $\frac{2 - m}{m - 2}$ 10) _____

A) Already in lowest terms B) 1
C) -m D) -1

Perform the indicated operation and express in lowest terms.

11) $\frac{6p - 6}{p} \cdot \frac{5p^2}{8p - 8}$ 11) _____

A) $\frac{30p^3 - 30p^2}{8p^2 - 8p}$ B) $\frac{4}{15p}$

C) $\frac{15p}{4}$ D) $\frac{48p^2 + 96p + 48}{5p^3}$

12) $\frac{k^2 + 10k + 16}{k^2 + 13k + 40} \cdot \frac{k^2 + 5k}{k^2 - 2k - 8}$ 12) _____

A) $\frac{k}{k^2 + 13k + 40}$ B) $\frac{k}{k - 4}$ C) $\frac{k^2 + 5k}{k - 4}$ D) $\frac{1}{k - 4}$

13) $\frac{z^2 + 13z + 36}{z^2 + 17z + 72} \div \frac{z^2 + 4z}{z^2 + 6z - 16}$ 13) _____

A) $\frac{z - 2}{z}$ B) $z - 2$ C) $\frac{z}{z^2 + 17z + 72}$ D) $\frac{z - 2}{z^2 + 8z}$

14) $\frac{25s^2 + 10st + t^2}{3s^2 - 11st - 4t^2} \cdot \frac{3s^2 - 13st + 4t^2}{t^2 + 4st - 5s^2} \div \frac{15s^2 - 2st - t^2}{3s^2 + 4st + t^2}$ 14) _____

A) 1 B) $\frac{(t + 5x)^2(3x - t)^2}{(4s + t)^2(t^2 - s^2)}$

C) $\frac{(t + 5s)}{(t + s)(t - s)}$ D) $\frac{t + s}{t - s}$

15) $\frac{3x + 16}{x^2 + 4x - 12} - \frac{x + 4}{x^2 + 4x - 12}$ 15) _____

A) $\frac{1}{x - 1}$ B) $\frac{2}{x - 2}$ C) $2x + 12$ D) $\frac{2x + 20}{x^2 + 4x - 12}$

Add or subtract as indicated. Write the answer in lowest terms.

16) $\frac{5}{r} + \frac{8}{r - 5}$ 16) _____

A) $\frac{25r - 13}{r(5 - r)}$ B) $\frac{13r - 25}{r(5 - r)}$ C) $\frac{13r - 25}{r(r - 5)}$ D) $\frac{25r - 13}{r(r - 5)}$

17) $\frac{x}{x^2 - 16} - \frac{4}{x^2 + 5x + 4}$ 17) _____

A) $\frac{x^2 + 3x + 16}{(x - 4)(x + 4)(x + 1)}$ B) $\frac{x^2 - 3}{(x - 4)(x + 4)(x + 1)}$

C) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)(x + 1)}$ D) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)}$

18) $\frac{x}{x^2 - 16} - \frac{8}{x^2 + 5x + 4}$ 18) _____

A) $\frac{x^2 - 7x + 32}{(x - 4)(x + 4)(x + 1)}$ B) $\frac{x^2 - 7x + 32}{(x - 4)(x + 4)}$

C) $\frac{x^2 + 7x + 32}{(x - 4)(x + 4)(x + 1)}$ D) $\frac{x^2 - 7}{(x - 4)(x + 4)(x + 1)}$

19) $\frac{1}{x - 3} - \frac{5}{3 - x}$ 19) _____

A) -1 B) $\frac{6}{x - 3}$ C) $\frac{8}{x - 3}$ D) $\frac{-4}{x + 3}$

Simplify the complex fraction.

20) $\frac{\frac{x}{7}}{\frac{8}{x + 8}}$ 20) _____

A) $\frac{x + 8}{56x}$ B) $56x(x + 8)$ C) $\frac{8x}{7(x + 8)}$ D) $\frac{x(x + 8)}{56}$

21) $\frac{\frac{1}{a} + 1}{\frac{1}{a} - 1}$ 21) _____

A) $\frac{1 + a}{1 - a}$ B) $\frac{a}{1 - a^2}$ C) $1 - a^2$ D) 1

22) $\dfrac{\dfrac{9s^2 - 25t^2}{st}}{\dfrac{3}{t} - \dfrac{5}{s}}$ 22) _____

A) $\dfrac{st}{3s + 5t}$ B) $3s + 5t$ C) $5s + 3t$ D) $\dfrac{5s + 3t}{st}$

23) $\dfrac{4 + \dfrac{2}{x}}{\dfrac{x}{3} + \dfrac{1}{6}}$ 23) _____

A) $\dfrac{12}{x}$ B) 12 C) $\dfrac{x}{12}$ D) 1

Simplify the expression, using only positive exponents in your answer.

24) $\dfrac{m^{-1} + z^{-1}}{m^{-1} - z^{-1}}$ 24) _____

A) $\dfrac{z + m}{z}$ B) $\dfrac{z + m}{m}$ C) $\dfrac{z - m}{z}$ D) $\dfrac{z + m}{z - m}$

25) $\dfrac{x^{-2}}{x^{-2} - y^{-2}}$ 25) _____

A) $\dfrac{y^2 - x^2}{y^2}$ B) $\dfrac{y^2}{y^2 - x^2}$ C) $\dfrac{y}{y^2 - x^2}$ D) $\dfrac{y^2}{y^2 + x^2}$

Solve the equation.

26) $1 + \dfrac{1}{x} = \dfrac{90}{x^2}$ 26) _____

A) $\{-10, 9\}$ B) $\{-9, 10\}$ C) $\{9, 10\}$ D) $\left\{-\dfrac{1}{10}, \dfrac{1}{9}\right\}$

27) $\dfrac{7}{x - 4} = 1 + \dfrac{9}{x + 4}$ 27) _____

A) $\{-8, 10\}$ B) $\varnothing$ C) $\{-9, 10\}$ D) $\{8, -10\}$

28) $\dfrac{2}{x - 2} + \dfrac{10}{x} = \dfrac{-20}{x^2 - 2x}$ 28) _____

A) $\{0, 2\}$ B) $\{-2\}$ C) $\varnothing$ D) $\{0\}$

Divide.

29) $\dfrac{x^2 + 8x + 8}{x + 6}$ 29) _____

A) $x + 2 + \dfrac{4}{x + 6}$ B) $x + 2 - \dfrac{4}{x + 6}$ C) $x + 3$ D) $\dfrac{x + 2}{x + 6}$

30) $\dfrac{-12x^3 + 5x^2 + 45x + 25}{4x + 5}$ 30) _____

A) $-3x^2 + 5$ B) $-3x^2 + 5x + 5$ C) $x^2 + 5x + 5$ D) $x^2 - 5x - 5$

31) $\dfrac{9y^4 + 15y^3 + 5y - 1}{3y^2 + 1}$ 31) _____

A) $3y^2 - 5y + 1$ B) $3y^2 + 5y - 1$ C) $3y^2 - 1$ D) $3y^2 + 5y$

Solve the problem. Round your answer, as needed.

32) A formula for electric circuits is $\dfrac{1}{a} = \dfrac{1}{b} + \dfrac{1}{c}$. If a = 13 and b = 14, find c. 32) _____

A) 0.929 B) 0.005 C) 1.077 D) 182

Solve the formula for the specified variable.

33) $P = \dfrac{A}{1 + rt}$ for r 33) _____

A) $r = P - tA$ B) $r = \dfrac{P - 1}{At}$ C) $r = \dfrac{P - A}{1 + t}$ D) $r = \dfrac{A - P}{Pt}$

34) $S = 2\pi rh + 2\pi r^2$ for h 34) _____

A) $h = \dfrac{S}{2\pi r} - 1$ B) $h = 2\pi(S - r)$ C) $h = \dfrac{S - 2\pi r^2}{2\pi r}$ D) $h = hS - r$

35) $\dfrac{1}{a} + \dfrac{1}{b} = c$ for b 35) _____

A) $b = ac - \dfrac{1}{a}$ B) $b = \dfrac{1}{ac}$ C) $b = \dfrac{a}{ac - 1}$ D) $b = \dfrac{1}{c} - a$

Solve the problem.

36) Martha can rake the leaves in her yard in 5 hours. Her younger brother can do the job in 6 hours. How long will it take them to do the job if they work together? 36) _____

A) $\dfrac{30}{11}$ hr B) 30 hr C) $\dfrac{11}{30}$ hr D) 6 hr

37) Frank can type a report in 3 hours and James takes 4 hours. How long will it take the two of them typing together? 37) _____

A) 4 hr B) $\dfrac{12}{7}$ hr C) 12 hr D) $\dfrac{7}{12}$ hr

38) An experienced accountant can balance the books twice as fast as a new accountant. Working together it takes the accountants 10 hours. How long would it take the experienced accountant working alone? 38) _____

A) 20 hr B) 15 hr C) 25 hr D) 5 hr

39) A plane flies 430 miles with the wind and 340 miles against the wind in the same length of time. If the speed of the wind is 27 mph, what is the speed of the plane in still air? 39) _____

A) 221 mph B) 256 mph C) 236 mph D) 231 mph

40) A boat goes 300 miles downstream in the same time it can go 250 miles upstream. The speed of the current is 8 miles per hour. Find the speed of the boat in still water. 40) _____

A) 88 mph B) 80 mph C) 55 mph D) 96 mph

Answer Key
Testname: 1033 TEST 2 REVIEW

1) B
2) D
3) C
4) C
5) B
6) C
7) A
8) A
9) C
10) D
11) C
12) B
13) A
14) D
15) B
16) C
17) C
18) A
19) B
20) D
21) A
22) B
23) A
24) D
25) B
26) A
27) D
28) C
29) B
30) B
31) B
32) D
33) D
34) C
35) C
36) A
37) B
38) B
39) D
40) A