Math 90 Fall 2009

Test #2 (Chapter 5 ,6, and 7)

Name_____

Class Time _____

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

Apply the quotient rule for exponents, if applicable, and write the result using only positive exponents. Assume all variables represent nonzero numbers.

1) $\dfrac{x^{-9}}{x^{-14}}$

1) _____

A) x^5 B) $\dfrac{1}{x^{23}}$ C) $-x^5$ D) $\dfrac{1}{x^5}$

Find the product.

2) $(2x + 3)(x - 9)$

2) _____

A) $x^2 - 27x - 15$ B) $2x^2 - 15x - 27$ C) $x^2 - 15x - 24$ D) $2x^2 - 24x - 27$

Divide.

3) $\dfrac{x^2 - 6x + 8}{x - 2}$

3) _____

A) $x + 4$ B) $x - 4$ C) $4 - x$ D) $x + 2$

Add or subtract as indicated.

4) $(5n^5 - 5n - 9n^3) + (-9n^3 + 3n^5 - 7n)$

4) _____

A) $8n^5 - 18n^3 - 12n$ B) $8n - 18n^5 - 12n^3$
C) $-2n^5 - 4n^3 - 16n$ D) $-22n^9$

A-1

Factor by grouping.

    5) $x^3 + 6x^2 + 4x + 24$

    A) $(x + 6x)(x^2 + 4)$ B) $(x + 6)(x^2 + 4)$ C) $(x - 6)(x^3 + 4)$ D) $(x + 4)(x^2 + 6)$

Factor the trinomial completely.

    6) $16y^2 + 24y + 9$

6) _____

    A) $(4y - 3)(4y - 3)$ B) $(16y + 3)(y + 3)$ C) $(16y + 1)(y - 9)$ D) $(4y + 3)(4y + 3)$

Factor the polynomial completely.

    7) $64a^3 - 27b^3$

7) _____

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

Solve the equation.

    8) $(7y + 26)(4y + 7) = 0$

8) _____

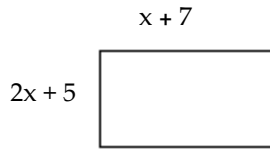   A) $\left\{-\dfrac{26}{7}, -\dfrac{7}{4}\right\}$ B) $\left\{\dfrac{26}{7}, \dfrac{7}{4}\right\}$ C) $\left\{-\dfrac{7}{19}, -\dfrac{4}{7}\right\}$ D) $\{19, 3\}$

Solve the problem.

9) The area of the rectangle shown is 56 in.^{2}. Find the length and the width of the rectangle.   9) _____

x + 7

2x + 5

A) length: 8 in.; width 7 in.   B) length: 21 in.; width 1 in.
C) length: 28 in.; width 28 in.   D) length: 9 in.; width 6 in.

Find all numbers not in the domain of the function.

10) $f(x) = \dfrac{x^2 - 64}{x^2 - 2x - 48}$ 10) _____

A) 0   B) 8, –8   C) –6, 8   D) 6, –8

Find the domain of the rational function.

11) $f(x) = \dfrac{x - 1}{7x + 8}$ 11) _____

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

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

12) $\dfrac{x}{x^2 - 16} - \dfrac{4}{x^2 + 5x + 4}$

12) _____

A) $\dfrac{x^2 - 3x + 16}{(x - 4)(x + 4)}$

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

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

D) $\dfrac{x^2 - 3}{(x - 4)(x + 4)(x + 1)}$

Perform the indicated operation and express in lowest terms.

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

13) _____

A) $\dfrac{k^2 + 5k}{k - 4}$

B) $\dfrac{1}{k - 4}$

C) $\dfrac{k}{k - 4}$

D) $\dfrac{k}{k^2 + 13k + 40}$

Simplify the complex fraction.

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

14) _____

A) 12

B) 1

C) $\dfrac{x}{12}$

D) $\dfrac{12}{x}$

Without actually solving the equation, list all possible numbers that would have to be rejected if they appeared as potential solutions.

15) $\dfrac{14}{6x + 13} - \dfrac{1}{x} = \dfrac{1}{13x - 9}$

15) _____

A) $-\dfrac{13}{6}, \dfrac{9}{13}, -14$

B) $0, -\dfrac{13}{6}, \dfrac{9}{13}$

C) $-\dfrac{13}{6}, \dfrac{9}{13}$

D) $0, \dfrac{13}{6}, -\dfrac{9}{13}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the equation.

16) $\dfrac{x}{2x + 2} = \dfrac{-2x}{4x + 4} + \dfrac{2x - 3}{x + 1}$

16) _____

Solve the problem.

17) If an object is projected upward with an initial velocity of 48 ft per sec from a height h of 160 ft, then its height t sec after it is projected is defined by the equation

$h = -16t^2 + 48t + 160.$

How many sec after it is projected will it hit the ground?

17) _____

Divide.

18) $\dfrac{x^2 - 81}{x^2 - 12x + 36} \div \dfrac{7x + 63}{x^2 - 2x - 24}$

18) _____

Solve.

19) The speed of a stream is 5 mph. If a boat travels 52 miles downstream in the same time   19) _____
that it takes to travel 26 miles upstream, what is the speed of the boat in still water?

Solve the equation.

20) $\dfrac{2y + 3}{y} = \dfrac{3}{2}$ 20) _____

1) A
2) B
3) B
4) A
5) B
6) D
7) A
8) A
9) A
10) C
11) B
12) C
13) C
14) D
15) B
16) {3}
17) 5 sec
18) $\dfrac{(x - 9)(x + 4)}{7(x - 6)}$
19) 15 mph
20) {–6}