Math 80   Exam 4   (Chapters 7 , 8 , and 9)

Name_____

3 points each

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

Factor the GCF from each term in the expression.

1) $8m^9 - 14m^6 + 20m^2$

    A) No common factor
                                                  B) $2m^2(4m^7 - 7m^4 + 10)$

    C) $m^2(8m^7 - 14m^4 + 20)$
                                                  D) $2(4m^9 - 7m^6 + 10m^2)$

Factor by grouping.

2) $8x^2 - 6x + 12x - 9$

    A) $(2x + 3)(4x - 3)$
    B) $(8x - 3)(x + 3)$
    C) $(8x + 3)(x - 3)$
    D) $(2x - 3)(4x + 3)$

Factor the polynomial. If the polynomial is prime, so state.

3) $x^2 + 23x + 24$

    A) $(x + 12)(x - 2)$
    B) $(x + 24)(x - 1)$
    C) $(x - 12)(x + 2)$
    D) prime

Factor completely. If the polynomial is prime, so state.

4) $9y^2 + 18y + 8$

    A) $(9y + 2)(y + 4)$
    B) $(3y - 2)(3y - 4)$
    C) $(3y + 2)(3y + 4)$
    D) prime

Factor the difference of two squares.

5) $36x^2 - 49y^2$

    A) $(6x + 7y)^2$
                                                  B) $(6x - 7y)^2$

    C) $(6x + 7y)(6x - 7y)$
                                                    D) prime

Simplify.

6) $\dfrac{3x - 15}{x^2 - 25}$

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

B) $-\dfrac{3}{x + 5}$

C) $\dfrac{3}{x + 5}$

D) $-\dfrac{12}{x - 25}$

Determine the value or values of the variable where the expression is defined.

7) $\dfrac{7}{x - 4}$

A) all real numbers except x = -4

B) all real numbers except x = 4

C) all real numbers except x = 0

D) all real numbers

Add or subtract.

8) $\dfrac{3x}{x^2 - 5x + 6} - \dfrac{9}{x^2 - 5x + 6}$

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

B) $\dfrac{3}{x - 3}$

C) $\dfrac{3(x + 3)}{(x - 3)(x - 2)}$

D) $\dfrac{3}{x - 2}$

Find the least common denominator for the expression.

9) $\dfrac{16}{x + 6} + \dfrac{7}{x^2 - 36}$

A) $(x + 6)(x^2 - 36)$

B) $x^2 - 36$

C) $x + 6$

D) $(x + 6)(x - 6)^2$

Simplify.

10) $\dfrac{\dfrac{1}{x} + 1}{\dfrac{1}{x} - 1}$

A) 1

B) $\dfrac{1 + x}{1 - x}$

C) $\dfrac{x}{1 - x^2}$

D) $1 - x^2$

Solve the equation and check your solution.

11) $\dfrac{9}{y+2} - \dfrac{6}{y-2} = \dfrac{12}{y^2-4}$

A) $y = 42$ B) $y = \sqrt{46}$ C) $y = 14$ D) $y = -14$

Solve the problem and answer the question.

12) A painter can finish painting a house in 6 hours. Her assistant takes 8 hours to finish the same job. How long would it take for them to complete the job if they were working together?

A) 7 hr   B) 5 hr   C) $3\dfrac{3}{7}$ hr   D) $\dfrac{7}{24}$ hr

Simplify.

13) $\sqrt{75x^2}$

A) $5x\sqrt{3}$ B) $5x^2\sqrt{3}$ C) $5\sqrt{3x^2}$ D) $5\sqrt{3}$

Simplify the expression.

14) $8\sqrt{3} - 3\sqrt{75}$
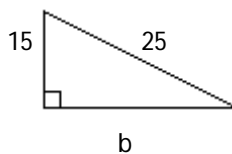
A) $5\sqrt{3}$ B) $7\sqrt{3}$ C) $-3\sqrt{3}$ D) $-7\sqrt{3}$

Use the Pythagorean Theorem to find the indicated quantity. Round your answer to the nearest hundredth.

15)

A) $b = 24$ B) $b = 20$ C) $b = 17.5$ D) $b = 25$

Free Response: Include all important steps in arriving at your answer. Please circle your final answer.

Factor completely. You may need to use more than one factoring strategy.

16) $50x^2 + 40x + 8$

Solve. Use Factoring and the Zero-Factor Property

17) $x^2 - 81 = 80x$

Simplify.

18) $\dfrac{3}{x + 6} - \dfrac{1}{9x + 54}$

Divide.

19) $\dfrac{x^2 + 9x + 18}{x^2 + 11x + 24} \div \dfrac{x^2 + 6x}{x^2 + 13x + 40}$

Simplify. Use the Product Rule for Radicals.

20) $\sqrt{108}$

1) B

2) A

3) D

4) C

5) C

6) C

7) B

8) D

9) B

10) B

11) C

12) C

13) A

14) D

15) B

16) $2(5x + 2)^2$

17) $-1, 81$

18) $\dfrac{26}{9(x + 6)}$

19) $\dfrac{x + 5}{x}$

20) $6\sqrt{3}$