Math 80 Fall 2009
Test #4 (Chapters 7 , 8, and 9)

Name_____

Tests from past semesters are provided as a study preparation tool. As tests are created by different instructors, problems on current tests may differ. Sample tests are a good beginning point in your test preparation but it is recommended that you don't use sample tests as your only study resource.

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

A) $2(4m^9 - 7m^6 + 10m^2)$
B) $m^2(8m^7 - 14m^4 + 20)$
C) $2m^2(4m^7 - 7m^4 + 10)$
D) No common factor

Factor by grouping.

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

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

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

3) $9y^2 + 18y + 8$ 3) _____

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

4) $35 + 6x^2 - 31x$ 4) _____

A) $(2x - 7)(3x + 5)$
B) $(2x - 7)(3x - 5)$
C) $(2x + 7)(-3x + 5)$
D) prime

Factor the difference of two squares.

5) $x^4 - 81$ 5) _____

A) $(x^2 + 9)(x + 3)(x - 3)$ B) $(x^2 - 9)(x^2 - 9)$
C) $(x^2 + 9)(x^2 + 9)$ D) prime

Simplify.

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

A) $\frac{3}{x - 5}$ B) $\frac{3}{x + 5}$ C) $-\frac{3}{x + 5}$ D) $-\frac{12}{x - 25}$

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

7) $\frac{x - 9}{x^2 - 12x + 27}$ 7) _____

A) all real numbers except $x = -9$, $x = -3$ B) all real numbers except $x = 9$, $x = 3$
C) all real numbers except $x = 0$ D) all real numbers except $x = 3$

Add or subtract.

8) $\frac{x + 10}{3x + 4} - \frac{x + 10}{3x + 4}$ 8) _____

A) 0 B) $\frac{10}{3x + 4}$ C) 1 D) $\frac{2x + 20}{3x + 4}$

9) $\frac{x}{8x-5} - \frac{5}{24x-15}$ 9) _____

A) $\frac{24x-120}{3(8x-5)}$ B) $\frac{3x-5}{3(8x-5)}$ C) $\frac{x-5}{3(8x-5)}$ D) $\frac{3x-5}{8x-5}$

Simplify.

10) $\frac{\frac{6}{a}+1}{\frac{6}{a}-1}$ 10) _____

A) 6 B) $6-a^2$ C) $\frac{a^2}{6-a^2}$ D) $\frac{6+a}{6-a}$

Solve the equation and check your solution.

11) $\frac{3}{2x} - \frac{1}{x+1} = \frac{1}{3x^2+3x}$ 11) _____

A) $x = -\frac{7}{3}$ B) $x = -\frac{7}{6}$ C) $x = -7$ D) No solution

Solve the problem and answer the question.

12) BJ can overhaul a boat's diesel inboard engine in 20 hours. His apprentice takes 60 hours to do the same job. How long would it take them working together. 12) _____

A) 6 hr B) 80 hr C) 12 hr D) 15 hr

Simplify (assume all variables are positive).

13) $\sqrt{243x^2}$ 13) _____

A) $243x$ B) $3x^2\sqrt{9}$ C) $9x\sqrt{3}$ D) $9\sqrt{3x}$

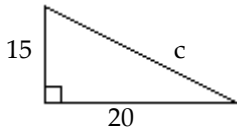
Simplify the expression.

14) $-3\sqrt{5} - 6\sqrt{45}$ 14) _____

A) $6\sqrt{5}$ B) $-21\sqrt{5}$ C) $-9\sqrt{5}$ D) $21\sqrt{5}$

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

15) 15) _____



A) c = 17.5 B) c = 20 C) c = 25 D) c = 24

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

Factor completely.

16) $14y^2 + 63y - 35$ 16) _____

Solve.

17) $-20x^2 + 15x = -4x^2 + 3x$ 17) _____

Add or subtract.

18) $\frac{2}{x^2} - \frac{x}{5x + 1}$ 18) _____

Divide.

19) $\frac{z^2 + 12z + 35}{z^2 + 14z + 45} \div \frac{z^2 + 7z}{z^2 + 13z + 36}$ 19) _____

Solve the equation and check your solution.

20) $\frac{x + 2}{3} = \frac{x + 3}{4}$ 20) _____

1) C
2) C
3) B
4) B
5) A
6) B
7) B
8) A
9) B
10) D
11) A
12) D
13) C
14) B
15) C
16) $7(2y - 1)(y + 5)$
17) $0, \frac{3}{4}$
18) $\frac{2 + 10x - x^3}{x^2(5x + 1)}$
19) $\frac{z + 4}{z}$
20) $x = 1$