Math 1643 Exam One (Form A) name: _____

Fall, 2013 id # _____ instructor: _____

Part One. Multiple Choice. Place answers on scantron. Fill out name and ID number. Place section number in Special Codes section

1) Rationalize the denominator: $\frac{5\sqrt{3}}{7\sqrt{2}-4\sqrt{5}}$

A) $\frac{35\sqrt{6}-20\sqrt{15}}{18}$ B) $\frac{35\sqrt{6}-20\sqrt{15}}{178}$ C) $\frac{12\sqrt{6}+9\sqrt{15}}{18}$

D) $\frac{35\sqrt{6}+20\sqrt{15}}{178}$ E) $\frac{35\sqrt{6}+20\sqrt{15}}{18}$

2) If $-11 < 2x+7 < 17$, then $K < 4x-5 < 15$. What is K ?

A) K = - 9 B) K = - 56 C) K = - 41 D) K = - 15 E) K = - 13

3) Factor completely: $64x^4 + x$

A) $x(8x-1)(8x+1)$ B) $x(4x+1)(16x^2+4x+1)$

C) $x(4x+1)(16x^2-4x+1)$ D) $x(4x+1)^3$ E) $x(4x+1)^2(4x-1)$

4) Perform these operations and simplify: $\frac{\sqrt[5]{x^2} \times \sqrt[4]{x}}{\sqrt{x}}$ = ??

A) $\sqrt[7]{x^2}$ B) $\sqrt[20]{x^{13}}$ C) $\sqrt[20]{x^3}$ D) $\sqrt[5]{x}$ E) $\sqrt[20]{x^7}$

5) Find the complete solution set for this equation: $\frac{3x-4}{x^2-4} = 5 + \frac{2}{x^2-4}$

A) $x = 2, -2$ B) $x = 2, -\frac{7}{5}$ C) $x = \frac{7}{5}, -\frac{7}{5}$ D) $x = -\frac{7}{5}$ E) no solution

6) If $x^2 + Ax + 400 = (x + C)^2$, then what is the value of $A + C$?

A) 40 B) 80 C) 60 D) 120 E) 20

7) What is the complete solution set for the equation: $|2x - 7| = 13$?

A) $x = 10$ B) $x = 10, -10$ C) $x = 3, 10$ D) $x = -3, 10$ E) $x = 3, -3$

8) Simplify the following: $(2x - 3)(3x - 2) - 4(x^2 - 5)$

A) $2x^2 - 13x - 14$ B) $x^2 - 13x + 26$ C) $2x^2 - 10x + 26$

D) $x^2 - 10x - 14$ E) $2x^2 - 13x + 26$

9) Find the complete solution set for the equation: $\frac{5x+1}{2} - \frac{x-1}{4} = 13 - \frac{x+3}{8}$

A) $x = 5$ B) $x = 3$ C) $x = \frac{99}{19}$ D) $x = \frac{105}{99}$ E) $x = -2$

10) Simplify the following: $\dfrac{\frac{1}{x-1} - \frac{2}{x+1}}{\frac{2}{x-1} + \frac{1}{x+1}}$

A) $\frac{x-3}{3x+1}$ B) $\frac{3-x}{3x+1}$ C) $\frac{x+3}{3x+1}$ D) $\frac{-x-1}{3x+1}$ E) $\frac{x-3}{3x}$

11) Find the complete solution set for this equation: $9x - 3(x - 1) = 6 + x$

A) $x = \frac{9}{5}$ B) $x = \frac{3}{5}$ C) $x = \frac{9}{7}$ D) $x = \frac{3}{7}$ E) $x = \frac{1}{2}$

12) Which of the following has $(x + 2)$ as a factor ?

A) $x^4 + 4x^3$ B) $x^3 - 5x^2 - 14x$ C) $x^4 + 64x$

D) $16x + x^4$ E) $x^4 + 3x^3 - 10x^2$

13) Find the complete solution set for the inequality: $-1 \leq 3 - \frac{x}{4} < 5$

A) $(-17, 7]$ B) $[-7, 17)$ C) $[-16, 8)$ D) $(-8, 16]$ E) $[-10, 1)$

14) Simplify: $\frac{x^5 \ (x^{-4})^3}{(x^2)^{-5}}$

A) $\frac{1}{x^3}$ B) x^3 C) $\frac{1}{x^7}$ D) x^7 E) $\frac{1}{x^5}$

15) Which of the following is true (assuming x and y are positive) ?

A) $(4^x)(4^y) = 4^{xy}$ B) $\sqrt{x} = \frac{1}{x^2}$ C) $4^{-xy} = \frac{4^x}{4^y}$

D) $(4^x)^y = (4^y)^x$ E) $\sqrt{(-4)^2} = -4$

16) Darken the letter A for this question (identifies the form)

Part Two. Show work on the attached answer sheet and place answer in the box provided.

1) Factor completely: $81 - 16x^4$

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2) Find the complete solution set for the equation: $\sqrt{3x+6} = x + 2$

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3) Solve the following for x: $a(b - x) = c + dx$

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4) I have two squares, one larger than the other. A side of the smaller square is seven less than twice the side of the larger square. If the sum of the perimeters of the squares is 44, then what is the length of one side of the smaller square?

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5) Find the complete solution set for the inequality: $\left|\frac{9-2x}{3}\right| \leq 8$

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6) Find the sum in radical form: $11\sqrt{12} + \frac{36}{\sqrt{3}} + 7\sqrt{75}$