Math 1643 Exam Two – Form E name: _____

Instructor _____ section: _____

Part One. Place your answers on the scantron. Use Special Codes to identify your section. Also, darken in your name and ID #.

1) If $f(x) = \frac{11 - 7x}{19}$, then $f^{-1}(5) = ??$

A) - 12 B) $-\frac{36}{7}$ C) $-\frac{106}{7}$ D) - 15 E) $-\frac{24}{19}$

2) Find the average rate of change of $f(x) = \sqrt{2x + 5} + 3x$ from $x = -2$ to $x = 10$.

A) $\frac{425}{12}$ B) $\frac{5}{2}$ C) 5 D) $\frac{10}{3}$ E) $\frac{41}{12}$

3) Which of the following lines is perpendicular to $3x - 12y = 11$?

A) $x - 4y = 3$ B) $x + 4y = 3$ C) $4x - y = 3$ D) $4x + y = 3$

E) none of these

4) If $f(x) = \frac{1}{2}x^2$ and $g(x) = 5 - x^2$, then $g \circ f(4a) = ??$

A) $5 - 64a^2$ B) $5 - 16a^4$ C) $5 - 64a^4$ D) $5 - \frac{1}{4}a^4$ E) $5 - \frac{1}{4}a^2$

5) Which of the following is an odd function?

A) $y = x^3 + 1$ B) $y = |x| - x$ C) $y = 3x - 2x^3$

D) $y = x^5 - 5x^3 - 11$ E) $y = 5 - x^3$

6) What is the radius of the circle: $x^2 + y^2 - 8x + 28y - 112 = 0$?

A) 24 B) 16 C) 18 D) $\sqrt{960}$ E) $\sqrt{142}$

7) What is the equation of the line through (- 4 , 11) and (2 , 20) ?

A) $3x + 2y = 10$ B) $3x - 2y + 34 = 0$ C) $2x + 3y = 25$

D) $2x - 3y + 41 = 0$ E) $y = 3x + 23$

8) Which point is a distance of 26 units from the point (- 3 , 8) ?

A) (5 , - 7) B) (- 27 , 18) C) (21 , - 1) D) (13 , 20) E) (6 , - 4)

9) The equation of a line is given by $kx - 8y = 17$. If the slope of this line is equal to $-\frac{2}{5}$, then what is the value of k?

A) 20 B) $-\frac{16}{5}$ C) - 5 D) $-\frac{13}{2}$ E) - 20

10) What is the x-intercept of $\frac{153}{x} + y^2 = 9$?

A) (17 , 0) B) (- 51 , 0) C) (3 , 0) D) (51 , 0) E) $(\frac{1}{17}, 0)$

11) Given $f(x) = x^2 + x$, find and simplify $\frac{f(x)-f(3)}{x-3}$.

A) $x-2$ B) $x+6$ C) $3x-4$ D) $x+4$ E) None of these

12) If $f(x) = [[x]]$ is the greatest integer function, then

find $\frac{f(2.3)-f(-2.3)}{2}$.

A) 2 B) 0 C) 4 D) 5 E) $\frac{5}{2}$

13) If the entire graph of $y = f(x)$ is located in the third quadrant,

then in which quadrant is the graph of $y = -f(-x)$ located?

A) first B) second C) third D) fourth E) None of these

14) If $f(x) = \frac{3x-11}{17}$, then $f^{-1} \circ f(x) = ??$

A) x B) $\frac{x+17}{11}$ C) $\frac{x-17}{11}$ D) $17x-11$ E) $\frac{3x-22}{17}$

15) Which of the following is symmetric about the origin?

A) $y = 3x + 1$ B) $y = x^2 + 2$ C) $y^2 = 7x - x^2$

D) $x = y^2 + y + 1$ E) $y^2 = |x| + 4$

16) Mark an E on your scantron for question number 16.

Part Two. Show your work and place your answer in the box provided.

1) If $f(x) = -11 - 5x - 12x^2$, then find and simplify

$$\frac{f(x+h)-f(x)}{h}, \text{ where } h \neq 0$$

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2) The midpoint of the line segment joining $(-2, 17)$ and $(18, k)$ is the point $M = (8, -15)$. Find the value of k

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3) Find the equation of the line in standard form that is perpendicular to the line $3x - 5y = 20$ and passes through the point $(2, -7)$

[Put in the form: $ax + by + c = 0$]

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4) If $f(x) = \begin{cases} 3x - 1 & \text{if } x < -2 \\ 5 - 2x & \text{if } -2 \leq x < 1 \\ x^2 - 1 & \text{if } x \geq 1 \end{cases}$, then find $f(\frac{1}{2}) + f(-4)$

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5) Find the inverse function $[f^{-1}(x)]$ for $f(x) = \frac{3x-7}{4-11x}$.

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6) If $h(x) = f \circ g(x)$ and $h(x) = \frac{5}{7-2x} + (10x+6)^2 - 11$ and

$g(x) = 2x$, then find $f(x)$.