BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05 — Exam 1–Take II
Nikos Apostolakis — September 24, 2018

Directions: Write your answers in the provided space. To get full credit you *must* show all your work. Simplify your answers whenever possible. Be certain to indicate your final answer clearly. This exam contains 100 points.

1. Which of the following is *larger*?

(a) (2 points) $\frac{5}{12}$ $\frac{7}{12}$

A. The first. B. The second. C. They are equal.

(b) (2 points) $\frac{5}{12}$ $\frac{4}{9}$

A. The first. B. The second. C. They are equal.

(c) (2 points) $\frac{5}{12}$ $\frac{5}{9}$

A. The first. B. The second. C. They are equal.

(d) (2 points) $\frac{5}{7}$ $\frac{10}{14}$

A. The first. B. The second. C. They are equal.

(e) (2 points) $-\frac{5}{12}$ $-\frac{7}{12}$

A. The first. B. The second. C. They are equal.

(f) (2 points) $\left|-\frac{2}{3}\right|$ $\left|-\frac{1}{2}\right|$

A. The first. B. The second. C. They are equal.

2. Perform the following operations. Simplify your answers as much as possible:

   (a) (2 points) $\frac{1}{8} + \frac{3}{8} =$

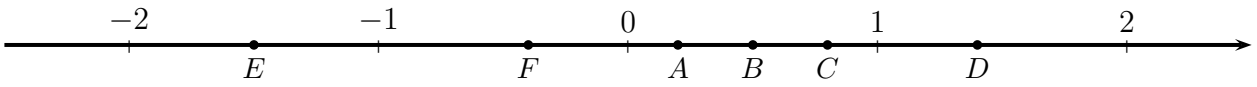
   (b) (2 points) $\frac{5}{9} - \frac{8}{9} =$

   (c) (2 points) $\frac{5}{6} - \frac{2}{3} =$

   (d) (2 points) $\frac{3}{5} + \frac{7}{4} =$

   (e) (2 points) $\left(-\frac{3}{5}\right) + \frac{7}{4} =$

3. Indicate which point in the number line below corresponds to which number.



   (a) (2 points) Point ____ corresponds to $-\frac{2}{5}$

   (b) (2 points) Point ____ corresponds to $\frac{1}{2}$

   (c) (2 points) Point ____ corresponds to $\frac{1}{5}$

   (d) (2 points) Point ____ corresponds to $\frac{4}{5}$

   (e) (2 points) Point ____ corresponds to $\frac{7}{5}$

   (f) (2 points) Point ____ corresponds to $-\frac{3}{2}$

4. (4 points) Evaluate: $(a-b)^2$, when $a = -1$, and $b = 2$.

   A. 5 B. -5 C. 9 D. 1

5. (4 points) Evaluate: $-x^2 + 2x$, when $x = 3$.

   A. -3 B. 3 C. -15 D. 15

6. (5 points) Evaluate: $5 - 3(4 - 3) - 2^3 \div 8 \cdot 4 =$

7. (5 points) Evaluate: $\dfrac{-16}{9} \cdot \dfrac{18}{-25} \cdot \left(-\dfrac{10}{6}\right) \cdot \dfrac{-5}{4} \cdot \dfrac{3}{4} =$

8. (5 points) Evaluate: $\dfrac{-2^2 + 3(6 - 4)}{12 - (3 - 7)^2} =$

9. (5 points) Evaluate: $\dfrac{2 - \dfrac{3}{2}}{\dfrac{1}{2} + \dfrac{3}{4}}$

10. (5 points) Evaluate the expression $\sqrt{b^2 - 4ac}$, when $a = -2$, $b = -3$, and $c = 2$.

11. (5 points) Evaluate the expression $\dfrac{y_2 - y_1}{x_2 - x_1}$, when $x_1 = 1$, $x_2 = -3$, $y_1 = -3$, and $y_2 = -9$.

12. (5 points) Evaluate the expression $x^2 - 2xy + y^2$, when $x = 3$ and $y = -2$.

13. (5 points) Evaluate $a^2 - b^2$, when $a = 3$ and $b = -3$.

    A. 18 B. -18 C. 0 D. 12

14. (5 points) Evaluate the expression $\dfrac{-x^2 + 3}{2 - x}$ when $x = -2$.

    A. $\dfrac{1}{4}$ B. $-\dfrac{1}{4}$ C. $\dfrac{12}{5}$ D. -12

15. (3 points) If $x = -\dfrac{3}{2}$ then $4x^2 + 4x - 3 = 0$

    A. True B. False.

16. (3 points) If x represents an unknown number then 8 subtracted from three times that number is represented by the expression:

A. $3x - 8$ B. $8 - 3x$ C. $3(x - 8)$ D. $3(8 - x)$

17. (3 points) If y represents an unknown number then 8 divided by twice that number is represented by the expression:

A. $8 - 2y$ B. $2y - 8$ C. $\frac{2y}{8}$ D. $\frac{8}{2y}$

18. (4 points) Write a mathematical expression that represents the following phrase:

The sum of four times a number and six, divided by nine more than the same number.