BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05 — Exam 1
Nikos Apostolakis — September 17, 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) $\frac{5}{11}$ $\frac{7}{11}$

   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) $\frac{7}{12}$ $\frac{5}{9}$

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

   (d) (2 points) $\frac{5}{11}$ $\frac{10}{33}$

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

   (e) (2 points) $-\frac{5}{9}$ $-\frac{7}{9}$

   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) $\frac{1}{9} + \frac{5}{9} =$

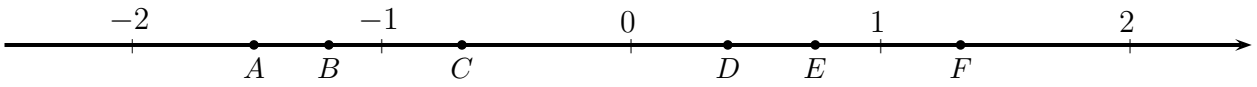
   (b) (2 points) $\frac{3}{7} - \frac{5}{7} =$

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

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

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

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



   (a) (2 points) Point ____ corresponds to $-\frac{5}{6}$

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

   (c) (2 points) Point ____ corresponds to $\frac{3}{4}$

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

   (e) (2 points) Point ____ corresponds to $\frac{4}{3}$

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

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

   A. -9 B. 9 C. 1 D. -6

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

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

6. (5 points) Evaluate: $9 - 2(3 - 4) - 4^2 \div 8 \cdot 4 =$

7. (5 points) Evaluate: $\dfrac{-16}{3} \cdot \dfrac{6}{25} \cdot \left(-\dfrac{5}{6}\right) \cdot \dfrac{-5}{2} \cdot \dfrac{3}{4} =$

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

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

10. (5 points) Evaluate the expression $\sqrt{b^2 - 4ac}$, when $a = 6$, $b = 1$, 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 $y_2 = 5$.

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

13. (5 points) Evaluate $x^2 - y$, when $x = \dfrac{1}{2}$ and $y = -\dfrac{1}{4}$.

    A. 0 B. $\dfrac{1}{4}$ C. $\dfrac{1}{2}$ D. $-\dfrac{1}{4}$

14. (5 points) Evaluate the expression $\dfrac{-x^2 + 10}{2x + 4}$ when $x = -4$.

    A. $\dfrac{2}{3}$ B. $-\dfrac{2}{3}$ C. $\dfrac{13}{2}$ D. $-\dfrac{13}{2}$

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

    A. True B. False.

16. (3 points) If n represents an unknown number then 7 subtracted from twice that number is represented by the expression:

A. $2x - 7$ B. $7 - 2x$ C. $2(x - 7)$ D. $2(7 - x)$

17. (3 points) If x represents an unknown number then 11 divided by three times that number is represented by the expression:

A. $11 - 3x$ B. $3x - 11$ C. $\dfrac{3x}{11}$ D. $\dfrac{11}{3x}$

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

The sum of six times a number and five, divided by seven less than the same number.