DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

MATH 05 (JP)   THIRD EXAMINATION
FALL 2015   Due date: 11/11/2015

Print Name:_____

> **Directions: You *must* show all your work in the provided space for full credit. Simplify your answer whenever possible. Be certain to indicate your final answers clearly. Each problem is worth 4 points.**
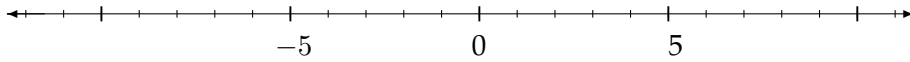
1. Evaluate: (a) $\frac{5}{6}((-5)^2 - (-5))$ $(b) 2(-3+2)^2$ $(c)\frac{1}{5} - (\frac{1}{3} - 1)$

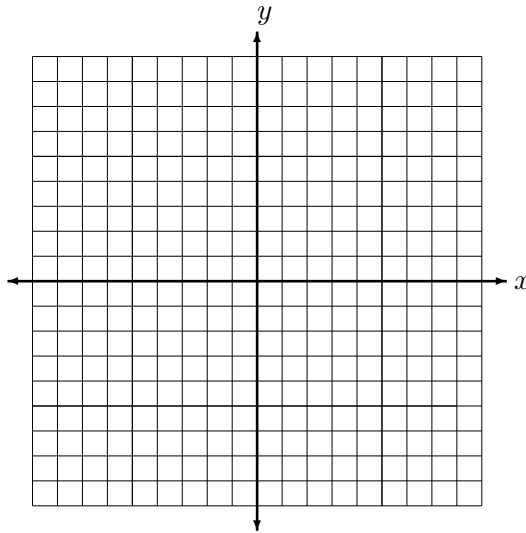**2.** Evaluate the expression $3x^2 + 2x - 10$ for $x = -2$.

3. Solve for x: $3(4 - x) = 5(x - 2)$

4. Solve for y: $5y - 7x = 35$

5. Solve: $2x - 3 < 8x + 9$ and (a) graph the solution set, (b) express the solution set in interval notation.

$$\xleftarrow{\hspace{0.5cm}} \begin{array}{ccccccc} & & & & & & \\ -5 & & 0 & & 5 & & \end{array} \xrightarrow{\hspace{0.5cm}}$$

6. Sketch the graph of $3x + 2y = -12$. Show the x and y intercepts.

7. Suppose $(1, 4)$ and $(4, -5)$ are points on a straight line.

a) Find the slope of the line through these points.

b) Find an equation for the line through these points.

8. Solve for x: $\begin{cases} -2x + 5y = 1 \\ x - 3y = -1 \end{cases}$

9. Write in Scientific Notation: (a) $\quad 7 \times 10^{-6} \times 6 \times 10^{13}$ $\qquad$ (b) $\quad \dfrac{45 \times 10^7}{100 \times 10^3}$

10. Subtract $x^2 - 10x + 4$ from $3x^2 - 12x - 10$.

11. Simplify: $\quad \dfrac{-8x^4 + 4x^3 - 24x^2}{4x^2}$

12. Factor completely: $\quad (a) 20x^2 - 9x$ $\qquad$ $(b) 2x^2 - x - 6$

13. Factor completely: $\quad (a) 4x^2 - 49$ $\qquad$ $(b) 4x^3 - 25x$

14. The sum of three consecutive numbers is 312. Find the smallest of the three.

15. Simplify the radicals: $(i)\sqrt{6}(3\sqrt{2}+\sqrt{6})$ $(ii)\sqrt{18}-\sqrt{50}$

16. Multiply and simplify: (i) $(2x+1)(x^2+2x-3)$ $(ii)(3x+1)^2$

17. Solve for t: $\dfrac{z-t+2}{3}=y$

18. Find all solutions of the equation: $24x^2=-6x$

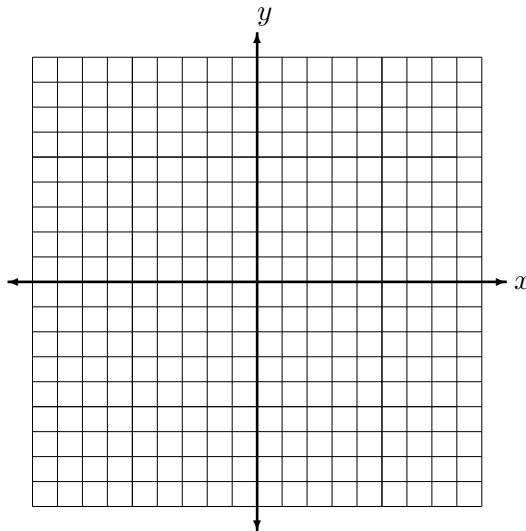**19.** If the price of an item goes up from $ 70 to $ 84. What was the percent of increase?

20. Find the equation of the horizontal line passing through the point $(-4,5)$.

21. Factor: $2x^3 + 3x^2 - 8x - 12$.

22. Simplify: $\left(\frac{x^4y^2}{xy^{-1}}\right)^2$.

23. Find all solutions to the quadratic equation: $4x^2 - 8x - 5 = 0$

24. Sketch the region determined by the inequality $3x + 2y \geq -12$.

25. If the cost of 5 pounds of a product is \$12. What is the cost of 6 pounds? Write your answer as a mixed number.