

Name: _____

Recitation Instructor and Time: _____

Studio College Algebra – Exam 1
February 3, 2009

Directions: There are 16 problems on this exam. Please show all your work.

1. Complete the following function table for $f(x) = 2x^3 - 4x$.

| | | | | | |
|--------|----|----|---|---|---|
| x | -2 | -1 | 0 | 1 | 2 |
| $f(x)$ | | | | | |

2. Rewrite the formula $A(g) = \frac{2b + g}{7b}$ at $g = 5b$, and simplify completely.

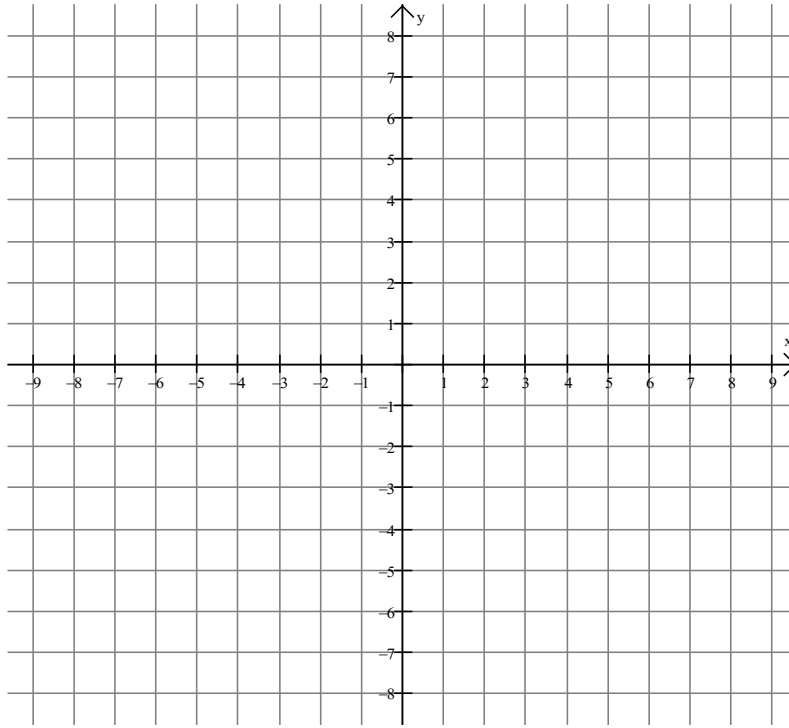
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3. Solve for x : $-2x - 15 = 13x + 30$.

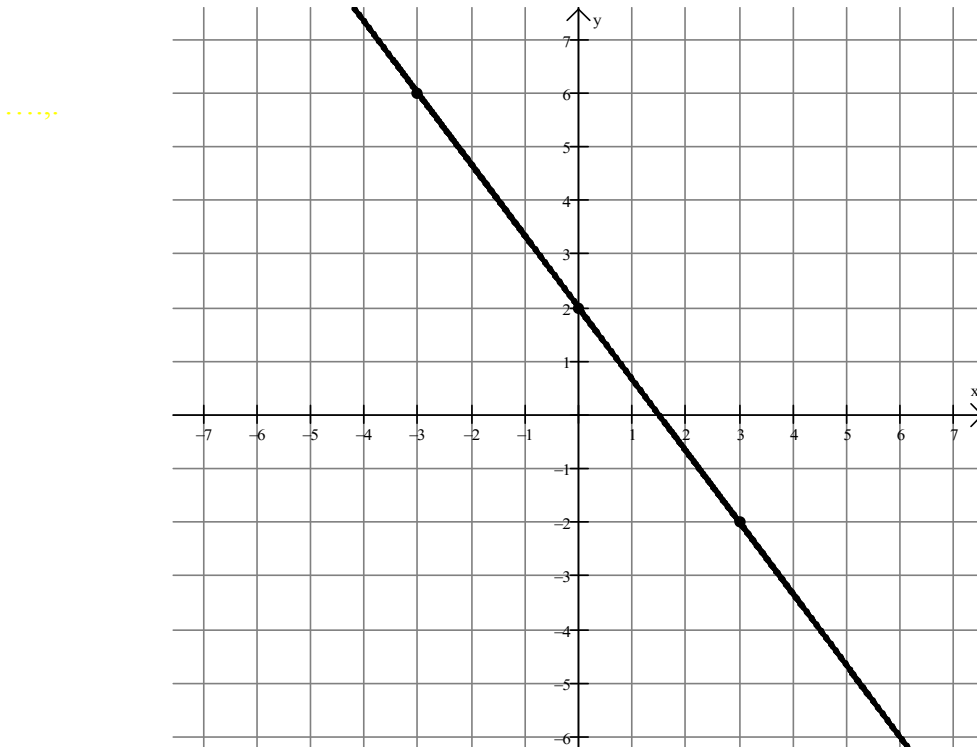
4. Suppose $x = 4$ solves $\square x - 9 = 4x - \square$. Solve for \square .

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5. Graph $2x - 5y = 10$ on the grid given below.



6. Find the equation of the line given below.



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7. Consider two different staircases, A and B. Staircase A rises vertically 7 inches for every 21 inches of horizontal increase. Staircase B rises vertically 10 inches for every 40 inches of horizontal increase. Which staircase is steeper, and how do you know you are correct?

8. Solve: $\frac{1}{3}x - 4 \leq \frac{7}{3}x - 6$

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9. Solve: $5x + 2 < 8x + 5 < 4x + 9$

10. Solve the system for x and y , if possible.
$$\begin{cases} 3x + 4y = 11 \\ 5x - 6y = -7 \end{cases}$$

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11. The total revenue from the sale of x units of a product is given by $R(x)=25.30x$, while the cost of producing x units is given by $C(x)=15.30x+250$. How many units must be sold in order to break even?

12. The supply for a product is given by $3p - q = 230$, and the demand for the product is given by $2p + q = 170$. Find the equilibrium point.

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13. Suppose that a company's daily profit from the production and sale of a certain product is given by the function $P(x) = 5.5x - 1750$ dollars, where x is the number of units produced and sold. What level of production and sales will yield a daily profit of **more than** \$12,000? (*Hint: Set up an inequality that describes the situation and solve the inequality*).

14. A rental car company depreciates its vehicles using a straight-line depreciation method. Suppose that a new vehicle is initially worth \$18,000, and 30 years later it is worth \$0. How much is the vehicle worth after 17 years?

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15. The equation $5F-9C=160$ gives the relationship between Fahrenheit and Celsius temperatures. What Celsius measurement is equivalent to a Fahrenheit measurement of 41° ?

16. The total cost of a dishwasher is \$579.89, which includes a 7.4% sales tax. What was the price of the dishwasher **before** adding in the sales tax?