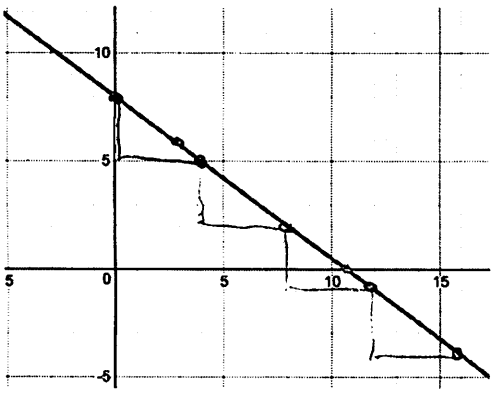
Algebra Final Exam

1. A graph of a linear function is given below. Create a table of at least five (x, y) values for the function and write an equation for the function.



x	y
0	8
4	5
8	2
12	-1
16	-4

$y = \frac{3}{4}x + 8$

2. Two of the expressions below are equivalent. Which two are equivalent? Explain how you know that the two you choose are equivalent.

Because the others are quadratics with x^2

a. $3(x+2)(x-4)-5x$

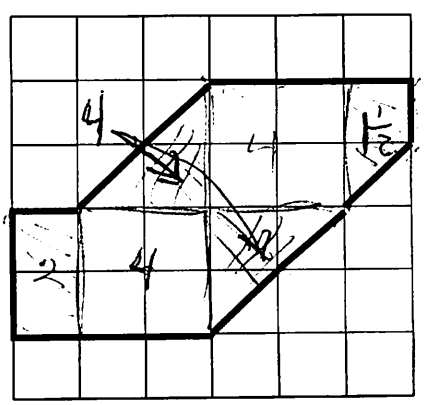
b. $3x-4x-5(x-4)$

c. $3x^2 - x + 6 - 5(6+2x)$

d. $3x(x-1)-8(x+1)$

e. $3x + x - 8 - 5(x+2)$

3. Determine the area and perimeter of the shape at right, where the small squares are one square unit.



Area $12 + 3\frac{1}{2}$

$15\frac{1}{2}$ sqs.

Perimeter

15

4. A taxi company charges \$6 when you enter the cab and \$0.75 for every mile you travel. If your bill was \$15.00, how many miles did you travel? Write an equation that fits this situation, and answer the question.

$y = .75 + 6x$

$15 = .75 + 6x$

$14.25 = 6x$

$x = 2.375$ miles

5. a. Solve for p: $7p - 3 = 13p + 9$.

$-6p = -12$

$p = 2$

b. Solve for y: $A = \frac{x+y+z}{3}$

$3A = 3x + 3y + 3z$

$3y = 3A - 3x - 3z$

$y = A - x - z$

6. Sierra Ski Adventures charges \$90 to be a member. Once you are a member you pay \$50 per day for the ski lift. Mountain Ski Club charges \$200 to be a member and then charges \$25 per day for the ski lift. In which circumstances is Sierra Ski Adventures the better deal and when is Mountain Ski Club the better deal? Use equations and explain how you know. Back up your explanation with tables and graphs.

Sierra \$90 \$50

Mt. \$200 \$15

Sierra

x	y
1	140
2	190
3	240
4	290

Mt. Ski

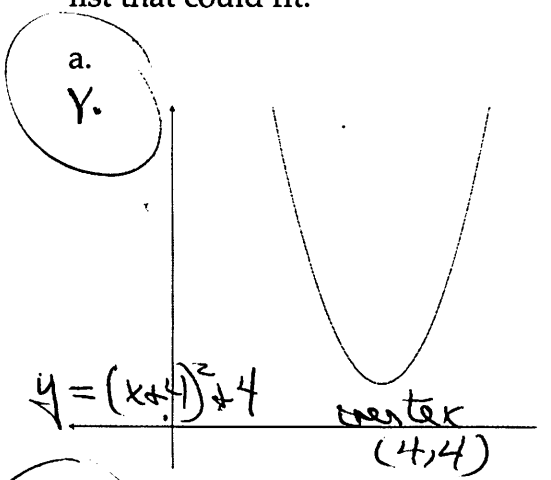
x	y
1	215
2	230
3	245
4	260

Sierra is better for up to 3 rides Mt. Ski is better if you plan to ski 4 or more days

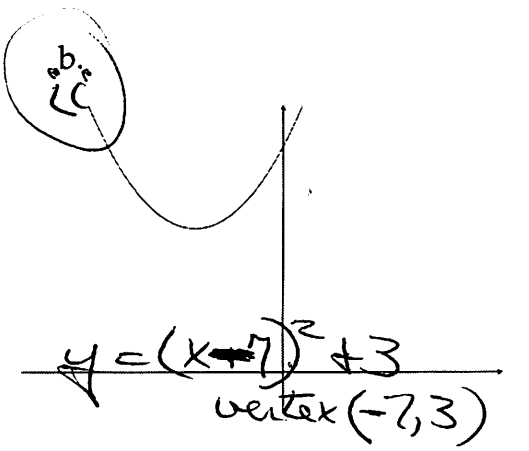
7. Each of the graphs a, b, and c below is the graph of a quadratic function. Notice that the scales are not given and can be very different, so all you can tell is which quadrant it is in.

Match each of the graphs with one of the equations. For each graph, explain how you know your choice of equation is the **only** one from the list that could fit.

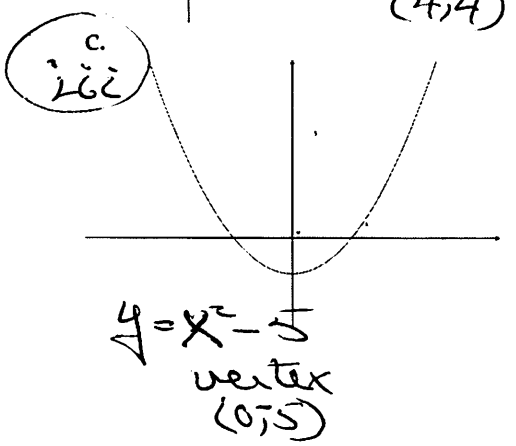
a.



b.

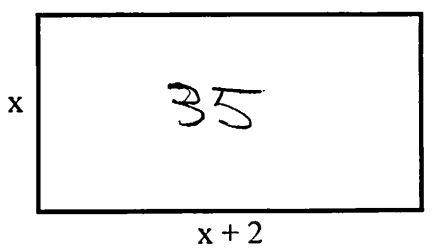


c.



i. $y = (x + 7)^2 - 4$
ii. $y = (x - 7)^2 + 3$
iii. $y = x^2 - 5$
iv. $y = x^2 + 3$
v. $y = (x + 4)^2 + 4$

8. The length of a rectangular piece of sheet metal is 2 feet more than the width. Its area is 35 square feet. What are the length and width of this piece of sheet metal? Write and solve an equation and solve it, in order to answer the question.



$A = lw$

$35 = x(x+2)$

5 × 7

$x = 5$

$x + 2 = 7$