Pre-Algebra
Homework 9: Solutions

1) See figure 1.

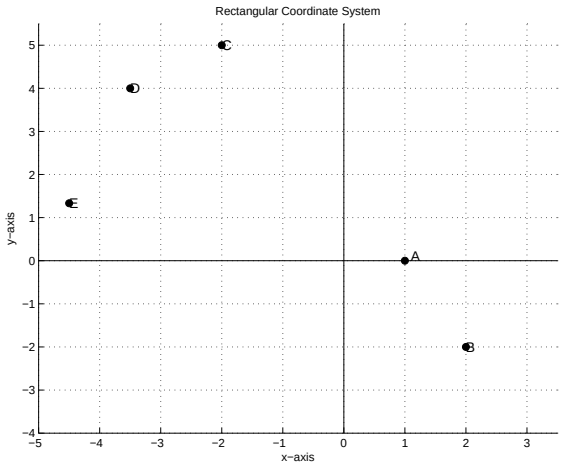

Figure 1: Problem 1.

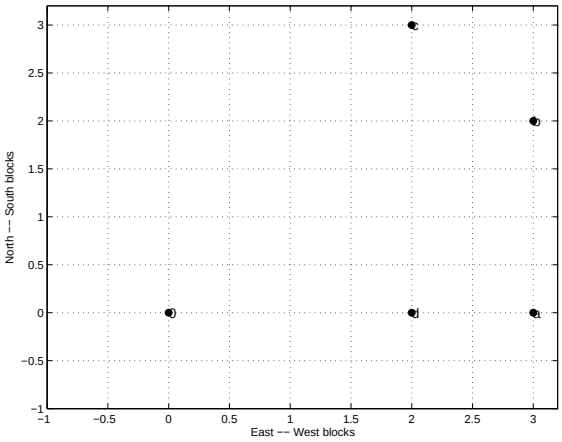

Figure 2: Problem 2.

2) See figure 2. At the end, George is 2 blocks away from home. In the figure, we assume that West is towards the left, North is up, East is towards the right, South is down.

3)
a) On the first of May 2008, one share of Coke costed approximately \$57 and one share of Pepsi roughly \$68. The total amount spent will be the sum of the two, or \$125.
b) In September 2008, the Coke's share was \$40 worth, and the Pepsi's share was \$69 worth.
c) From May 2008 to April 2009, Pepsi's stock is never worth significantly less than Cokes.

They are roughly comparable at the end of March 2009 and in April 2009.
d) The best time to buy a share of Coke, if I were to sell it in April 2009, would be between July 1st and August 1st 2008, when the share was worth the least. I would make approximately \$(52-35)=\$17 per share.

4)
a) The slope is $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-1}{1-0} = 3/1 = 3$
b) $m = \frac{-3-2}{1-(-2)} = -5/3$
c) $m = \frac{1-0}{-1-5} = -1/6$
d) $m = \frac{3-2}{-1-2} = -1/3$
The steepest line is the line in a), whose slope is 3.

5)
a) $y = 10x - 15$: slope is 10, y-intercept is -15.
b) $y = -x + 4$: slope is -1, y-intercept is 4.
c) non linear.
d) $y = 2x + 3$: slope is 2, y-intercept is 3.
e) $x = 1$: slope is infinite, no y-intercept can be defined.

6) Let us call 1 the point where the ladder touches the window. If the foot of the building has coordinates $(0, 0)$, then the coordinates of that point (in feet) will be $(x_1, y_1) = (0, 20)$. The coordinates of the point where the ladder touches the ground will be $(x_2, y_2) = (x, 0)$, where x is our unknown. Requiring that the slope of the ladder be 2 means that $2 = \frac{y_2 - y_1}{x_2 - x_1} = -20/x$, which implies $x = -10$. So, the base of the ladder is 10 feet far from the building.

7) If the painting company charges \$150 to paint one room and \$40 for each additional room, painting 6 rooms will cost a total of $150 + 5 \times 40 = 350$ dollars. The three points we specify in figure 3 are: $P_1 = (1, 150)$, $P_2 = (6, 350)$, $P_3 = (11, 550)$.

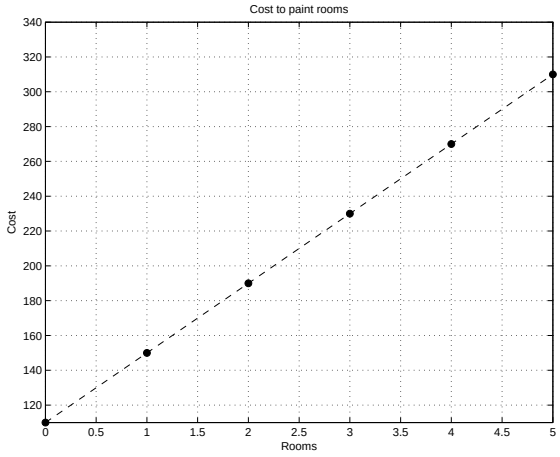

Figure 3: Problem 7.