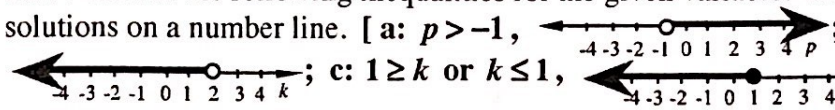
HW 9.2.1) 9-51 to 9-55

9-51. Solve each of the following inequalities for the given variable. Represent your solutions on a number line. [**a:** $p > -1$,  ; **b:** $k < 2$, ; **c:** $1 \geq k$ **or** $k \leq 1$,]

a. $2(3p+1) > -4$ b. $9k - 2 < 3k + 10$ c. $5 - h \geq 4$

9-52. Solve the following quadratic equations. Check your solutions, if possible.

a. $2k^2 + k - 6 = 0$
[$k = 1.5$ or -2]

b. $m^2 = 9$
[$m = 3$ or -3]

c. $w(2w + 8) = 24$
[$w = 2$ or -6]

d. $3n^2 - 4n = 5$
[$n = \frac{4 \pm \sqrt{76}}{6} \approx 2.12$ or ≈ -0.79]

9-53. Identify the statements below as sometimes true, always true, or never true.

a. $-4 \leq 9$
[always]

b. $x < 1$
[sometimes]

c. $-5 > -2$
[never]

d. $3x + 5 = 2$
[sometimes]

e. $61 = 61$
[always]

f. $-6 < -6$
[never]

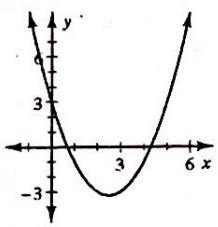
9-54. Robbie builds model rockets. One day he sets up a rocket, backs away from the launch pad, and then shoots the rocket off into the air. The rocket's path is represented by the equation $y = -10x^2 + 130x - 400$, where y is the height in meters off the ground and x is the horizontal distance in meters from Robbie.

a. Use either the Zero Product Property or the Quadratic Formula to find the x-intercepts of the path of Robbie's rocket. What do the x-intercepts tell you? **[(5, 0) and (8, 0); Robbie must have backed up 5m from the launch pad and the rocket must have landed 8m away from him.]**

b. When Robbie's rocket lands, how far is it from the launch pad? **[3 meters]**

9-55. For each parabola graphed below, visually estimate the x-intercepts. Then use the Quadratic Formula to confirm your estimates. [**a:** $x = \frac{5 \pm \sqrt{13}}{2} \approx 0.7$ **or** 4.3, **b:** $x = -1 \pm \sqrt{7} \approx -3.6$ **or** 1.6]

a. $y = x^2 - 5x + 3$



b. $y = x^2 + 2x - 6$