MAT 011, Solving Quadratics by Factoring (6.6) Name KEY

1. Solve.

a. $(x-6)(x-7)=0$

$x=6, x=7$

b. $(2x-7)(7x+2)=0$

$2x-7=0$ $\quad 7x+2=0$

$2x=7$ $\quad \frac{7x}{7}=\frac{-2}{7}$

$x=\frac{7}{2}$ $\quad x=-\frac{2}{7}$

c. $x^2-4x=32$

$x^2-4x-32=0$

$(x-8)(x+4)=0$

$x=8, x=-4$

d. $x(3x-1)=14$

$3x^2-x-14=0$

$(3x-7)(x+2)=0$

$x=\frac{7}{3}, x=-2$

e. $x^3-12x^2+32x=0$

$x(x^2-12x+32)=0$

$x(x-8)(x-4)=0$

$x=0, x=8, x=4$

f. $4x^3-x=0$

$x(4x^2-1)=0$

$x(2x-1)(2x+1)=0$

$x=0, x=\frac{1}{2}, x=-\frac{1}{2}$

g. $x(x-7)=0$

$x=0$ $\quad x=7$

h. $x^2+2x-8=0$

$(x+4)(x-2)=0$

$x=-4, \quad x=2$

i. $x^2=9$

$x^2-9=0$

$(x-3)(x+3)=0$

$x=3, x=-3$

j. $6x^2+57x=30$

$6x^2+57x-30=0$ $\quad x=\frac{1}{2}$

$3(2x^2+19x-10)=0$ $\quad x=-10$

$3(2x-1)(x+10)=0$

k. $(2x+5)(4x^2+20x+25)=0$

$(2x+5)(2x+5)(2x+5)=0$

$x=-\frac{5}{2}$

l. $(y-5)(y-2)=28$

$y^2-7y+10=28$ $\quad y=9, y=-2$

$y^2-7y-18=0$

$(y-9)(y+2)=0$

2. Find the intercepts of the graph of each equation.

a. $y=(3x+4)(x-1)$

$x=-\frac{4}{3}, x=1$

$(-\frac{4}{3},0), (1,0)$

b. $y=2x^2+11x-6$

$(2x-1)(x+6)$

$x=\frac{1}{2}, x=-6$

$(\frac{1}{2},0), (-6,0)$

d. $y=x^2-3x-10$

$(x-5)(x+2)$

$x=5, x=-2$

$(5,0), (-2,0)$

e. $4x^2+11x+6=y$

$(4x+3)(x+2)=0$

$x=-\frac{3}{4}, x=-2$

$(-\frac{3}{4},0), (-2,0)$

c. $y = 2x^2 - 8$

$2(x^2 - 4)$

$2(x-2)(x+2)$

$x = 2, x = -2$

$(2,0), (-2,0)$

f. $y = x(x+3)$

$x = 0, x = -3$

$(0,0), (-3,0)$

3. Write a quadratic equation with two solutions at 6 and -1.

$0 = (x-6)(x+1)$

4. A compass is accidentally thrown upward and out of an air balloon at a height of 300 feet. The height y of the compass at time x in seconds is given by $y = -16x^2 + 20x + 300$.

a. Find the height of the compass at the given times by completing the table.

x	0	1	2	3	4	5	6
y	300	304	276	216	124	0	-156

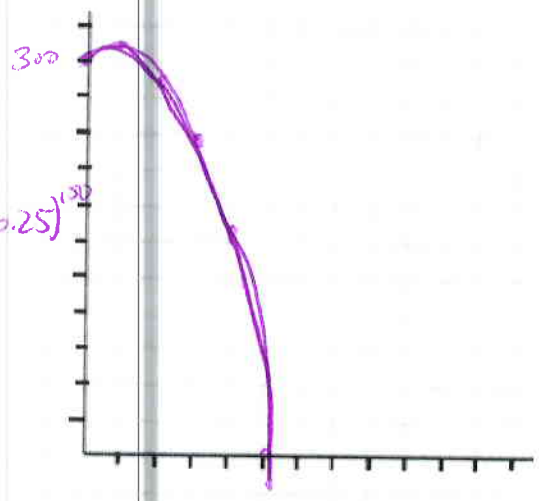
b. When does the compass hit the ground?

at 5 seconds

c. What is the max height of the compass?

$\approx$ 304 (act. 306.25)

d. Plot the points and draw a graph.



5. Solve $(x-6)(2x-3) = (x+2)(x+9)$

a. By doing algebra.

$2x^2 - 3x - 12x + 18 = x^2 + 11x + 18$

$2x^2 - 15x - x^2 - 11x = 0$

$x^2 - 24x = 0$

$x(x-24) = 0$

$x = 0$

$x = 24$

b. By graphing. Draw the graph the label the solutions. [Hint: Your window needs to display values of y larger than 20.]