Ex 1

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

$x-3=0 \quad x+4=0$

$+3\ +3 \quad -4\ -4$

$x=3 \quad x=-4$

$(3-3)(3+4)$

$0 \cdot 7 = 0$

$(-4-3)(-4+4)$

$-7 \cdot 0$

$0=0$

Ex 2 $(2x+5)(x-7)=0$

$2x+5=0 \quad x-7=0$

$2x=-5 \quad +7\ +7$

$x=\frac{-5}{2} \quad x=7$

Ex 3 $(4x-1)(3x+2)=0$

$4x-1=0 \quad 3x+2=0$

$+1\ +1 \quad -2\ -2$

$\frac{4x}{4}=\frac{1}{4} \quad \frac{3x}{3}=\frac{-2}{3}$

$x=\frac{1}{4} \quad x=-\frac{2}{3}$

Ex 4 $x^2+3x-10=8$

$-8\ -8$

$x^2+3x-18=0$

$-18 \times -3 = 6 \times 3$

$(x+6)(x-3)=0$

$x+6=0 \quad x-3=0$

$-6\ -6 \quad +3\ +3$

$x=-6 \quad x=3$

Ex 5 $-16x^2-8x-3=-3-7x^2$

$+7x^2 \quad +3\ +3 \quad +7x^2$

$\frac{x^2}{x}-\frac{8x}{x}=0$

$x(x-8)=0$

$x=0 \quad (x-8)=0$

$+8\ +8$

$x=8$

Ex 6 $3x^2-16x-7=5$

$-5\ -5$

$3x^2-16x-12=0$

$-36 \times -18 = 2 \times -16$

$(3x^2+2x)(-18x-12)=0$

$\frac{x}{x} \quad \frac{-6}{-6}$

$x(3x+2)-6(3x+2)$

$(x-6)(3x+2)=0$

$x-6=0 \quad 3x+2=0$

$+6\ +6 \quad -2\ -2$

$x=6 \quad \frac{3x}{3}=\frac{-2}{3}$

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

Let's start by using our knowledge from Unit 3A and graphing quadratics.

Graph the function $y = x^2 + 2x - 3$ using a table.

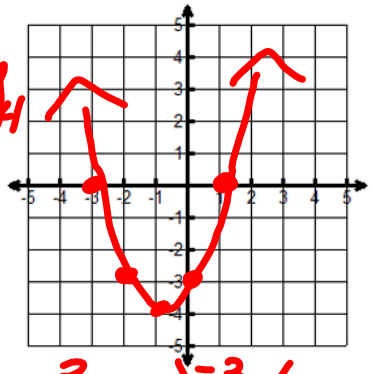
a=1 b=2 c=-3

$\frac{-2}{2(1)} = -1$

x	-3	-2	-1	0	1
$f(x)$	0	-3	-4	-3	0

$(-1)^2 + 2(-1) - 3 = -4$

x | y
-1 | -4
0 | -3
1 | 0



Then, find the x-intercepts, which we will call the zeroes for the rest of this unit.

x = -3 and x = +1

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

$(x+3)(x-1)$

$x+3=0$ $x-1=0$

$-3 \quad -3$ $+1 \quad +1$

$x=-3$ $x=1$

-3 3 -1 2

Application 1:
A ball is thrown up with an initial velocity of 32 ft/sec at a height of 240 ft. Use the equation $h(t) = -16t^2 + v_0 t + h_0$ to find when the ball hits the ground.

v_0 h_0

$$\frac{-16t^2}{-16} + \frac{32t}{-16} + \frac{240}{-16} = \frac{0}{-16}$$

$$t^2 - 2t - 15 = 0$$

15, $-5 \cdot 3$, -2

$$(t-5)(t+3) = 0$$

$t - 5 = 0$ $+5 \quad +5$ $t = 5$

$t + 3 = 0$ $-3 \quad -3$ $t = -3$

Application 2:
Bill throws a water balloon from his hotel balcony with an initial velocity of 32 ft/sec at a height of 128 feet. When will the balloon reach his friend whose balcony is at 80 feet above the ground?