Key

1. Solve the following system of equations algebraically:

$$x^2 + y^2 = 5$$

$$3x = y + 5$$
$$\underline{-5 \quad -5}$$

$$\boxed{3x - 5} = y \quad \text{Substitute!}$$

$x^2 + (3x-5)^2 = 5$

$x^2 + (3x-5)(3x-5) = 5$

$x^2 + 9x^2 - 15x - 15x + 25 = 5$
$$ -5 \quad -5$$

$$\frac{10x^2 - 30x + 20}{10} = \frac{0}{10}$$

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

$$\frac{(x-2)(x-1) = 0}{}$$

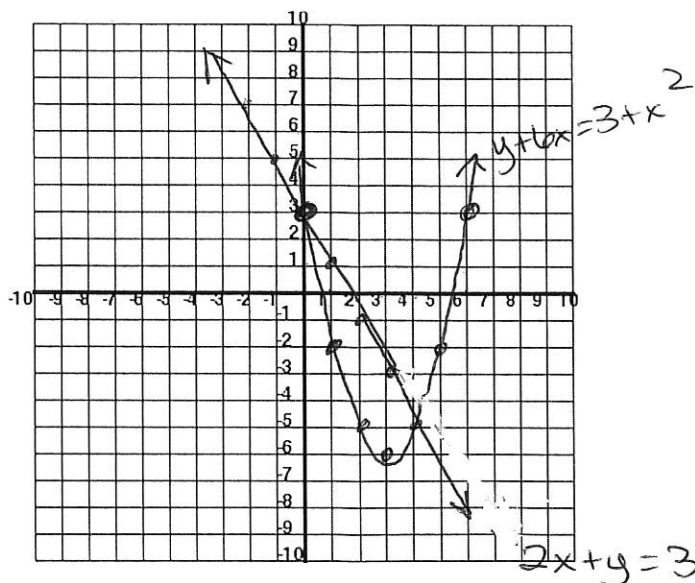| $x = 2$	$x = 1$
$y = 3x - 5$	$y = 3x - 5$
$y = 3(2) - 5$	$y = 3(1) - 5$
$y = 1$	$y = -2$
$(2, 1)$	$(1, -2)$

2. Solve the following system of equations **algebraically or graphically:**

$$2x + y = 3 \longrightarrow y = -2x + 3$$

$$y + 6x = 3 + x^2 \longrightarrow y = x^2 - 6x + 3$$

$y + 6x = 3 + x^2$

$2x + y = 3$

x	y
0	3
1	-2
2	-5
3	-6
4	-5
5	-2
6	3

Solutions:
$(0, 3)$
$(4, -5)$

3. Given two functions $H(t) = \overset{7t^2 + 3t}{-117t^2 + 303t}$ and $K(t) = \underset{6t^2 + 5t}{612 + 3t}$. **Using the intersection key on your calculator,** determine all values of t for when $H(t) = K(t)$, rounded to the nearest thousandth.

$t = -0.794, \ 1.080$