4-5 solutions

1) a) $9x^2 - 1 = 0$ difference of squares

$(3x-1)(3x+1)=0$ $a^2 - b^2 = (a-b)(a+b)$

$x = 1/3 \quad x = -1/3$

b) $x^2 + 13x = -36$

$x^2 + 13x + 36 = 0$

$(x+4)(x+9)=0$

$\boxed{x=-4 \quad x=-9}$

c) $h^3 - 5h^2 = 6h$

$h^3 - 5h^2 - 6h = 0$

$h(h^2 - 5h - 6) = 0$

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

$\boxed{h=0 \quad h=6 \quad h=-1}$

2) Solve by graphing

a) $x^2 + 5x + 3$

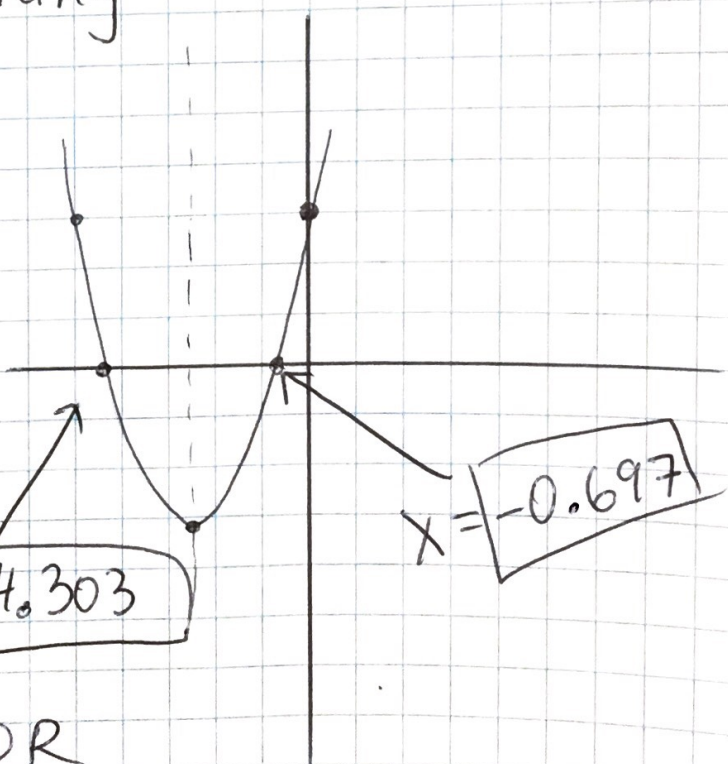
<u>vertex</u> $h = \frac{-b}{2a} = \frac{-5}{2} = \boxed{-2.5}$

$(-2.5, -3.25)$ $k = (-2.5)^2 + 5(-2.5) + 3$

$k = 6.25 - 12.5 + 3$

$k = \boxed{-3.25}$

$a = \frac{1}{1}$



USE CALCULATOR

MENU 5, GRAPH, G-SOLVE, ROOT

2) b) $\underbrace{10x^2+3}_{y_1} = \underbrace{11x}_{y_2}$

Option 1 (intersect of y_1 and y_2)

MENU 5, enter left side as y_1
enter right side as y_2
G-solve - intersect (F5)

Option 2 (solve equation to equal to 0 first)

MENU 5, enter $10x^2-11x+3$
G-solve, ROOT

$\boxed{X = 0.5 \quad X = 0.6}$

c) $\underbrace{5x^2+x}_{y_1} = \underbrace{4}_{y_2}$ (steps same as question a and b)

OR $\underbrace{5x^2+x-4}_{y_1} = 0$

$\boxed{X = -1 \quad X = 0.8}$

3) $h = -16t^2 + 1700$ ← initial value

~~1000~~ $= -16t^2 + 1700$
-1000

$0 = -16t^2 + 700$

MENU 5
GRAPH
ROOT

~~$t = -6.61$~~ $\boxed{t = 6.61}$

time cannot be negative

4-6 solutions

1) a) $\frac{2}{2}x^2 = \frac{72}{2}$

$\sqrt{x^2} = \sqrt{36}$

$\boxed{x = 6 \text{ or } -6}$

b) $\frac{6}{6}x^2 = \frac{54}{6}$

$\sqrt{x^2} = \sqrt{9}$

$\boxed{x = 3 \text{ or } -3}$

2) a) $x^2 + 6x - 3 = 0$

FORMULA $a^2 + 2ab + b^2 = (a+b)^2$

$\boxed{a = x}$

$2ab = 6x$

$2b = \frac{6}{2}$

$\boxed{b = 3}$

$b^2 = 9$

this number should be 9 in order for this trinomial to be a perfect square! therefore we must add 12 on both sides

$x^2 + 6x - 3 = 0$

$+12 \quad +12$

$x^2 + 6x + 9 = 12$

$\sqrt{(x+3)^2} = \sqrt{12}$

$x + 3 = \sqrt{12}$ or $x + 3 = -\sqrt{12}$

$x + 3 = \sqrt{2 \cdot 2 \cdot 3}$ or $x + 3 = -\sqrt{2 \cdot 2 \cdot 3}$

$x + 3 = 2\sqrt{3}$ or $x + 3 = -2\sqrt{3}$

$\boxed{x = -3 + 2\sqrt{3} \text{ or } x = -3 - 2\sqrt{3}}$

2) b) $x^2+4x+2=0$

$a^2+2ab+b^2=(a+b)^2$

$a=x$

$b=2$

$b^2=4$ should be 4

$x^2+4x+2=0$

$+2 \quad +2$

$x^2+4x+4=2$

$\sqrt{(x+2)^2}=\sqrt{2}$

$x+2=\sqrt{2}$ OR $x+2=-\sqrt{2}$

$\boxed{x=-2+\sqrt{2} \text{ OR } x=-2-\sqrt{2}}$