1) Simplify

$-2(4 - 5 \cdot 3) + 4 - 3^2$

$4 - 15$

$-2(-11) + 4 - 3^2$

$-2(-11) + 4 \quad -9$

$22 + 4 - 9$

$26 - 9$

$\boxed{17}$

2) Simplify

$-(2x - 6) - 6(2x - 4) + 7x$

$-2x + 6 - 12x + 24 + 7x$

$-2x - 12x + 7x + 6 + 24$

$\boxed{-7x + 30}$

3) Solve

$7 - 3x + 12 = 4x + 1$

$-3x + 7 + 12 = 4x + 1$

$-3x + 19 = 4x + 1$

$\quad -4x \qquad\qquad -4x$

$-7x + 19 = 1$

$\quad -19 \quad -19$

$-7x = -18$

$\boxed{x = \dfrac{18}{7} = 2.57}$
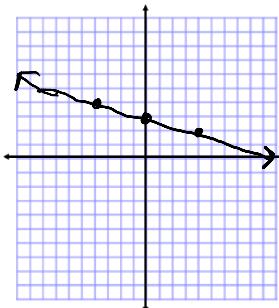
4) Graph the linear equation

$y = -\dfrac{1}{4}x + 3$

x	y
0	3
4	2
-4	4

$y = \dfrac{-1}{4}(4) + 3$

$y = -1 + 3 = \boxed{2}$

$y = -\dfrac{1}{4}(-4) + 3$

$y = 1 + 3 = \boxed{4}$

5) Solve and graph on a number line

$-\dfrac{2}{3}x + 10 < 6$

$\quad -10 \quad -10$

$\left(-\dfrac{3}{2}\right) - \dfrac{2}{3}x < -4 \left(-\dfrac{3}{2}\right)$

$x > \dfrac{12}{2}$

$\boxed{x > 6}$
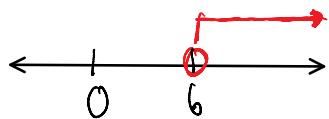
6) Solve the system of linear equations

$-2(x + y = 12)$

$2x + 3y = 31$

$-2x - 2y = -24$

$2x + 3y = 31$

$\boxed{y = 7}$

$x + y = 12$

$x + 7 = 12$

$\quad -7 \quad -7$

$\boxed{x = 5}$

$\boxed{(5, 7)}$

7) Graph the system of linear inequalities

$y \geq -2x + 5$

$y \geq x$

x	y
0	5
1	3
2	1

x	y
0	0
1	1
2	2
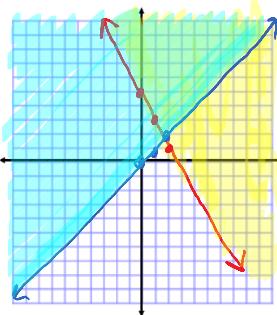
8) Find the zeroes of the quadratic function

8) Find the zeroes of the quadratic function

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

$-1(x^2 - 2x - 8)$

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

$a = 1$
$b = -2$
$c = -8$

$-4 \times +2$
-2

$x - 4 = 0$ and $x + 2 = 0$
$+4 \quad +4 \qquad\qquad -2 \quad -2$

$\boxed{x = 4 \text{ and } x = -2}$

9) Graph the quadratic function
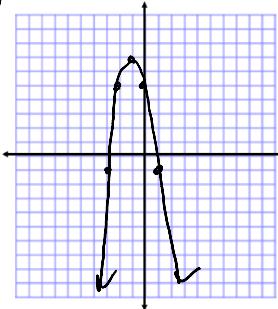
① $y = -2x^2 - 4x + 5$

② $x = \dfrac{-b}{2a} = \dfrac{-(-4)}{2(-2)} = \dfrac{4}{-4} = \boxed{-1}$

$y = -2(-1)^2 - 4(-1) + 5 = -2(1) + 4 + 5$

$y = -2 + 4 + 5 = \boxed{y = 7}$

vertex:
$(-1, 7)$

③
1 $(a) = -2$
3 $(a) = -6$
5 $(a) = -10$

10) Simplify the radical

$\sqrt{20} = \sqrt{4 \cdot 5} = \sqrt{4} \cdot \sqrt{5} = \boxed{2\sqrt{5}}$