1. Find the roots using quadratic formula and factoring.

$x^2 + 10x - 10 = 1$
$\quad -1 \quad -1$

$x^2 + 10x - 11 = 0$

$a = 1 \quad b = 10 \quad c = -11$

formula:

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{-(10) \pm \sqrt{(10)^2 - 4(1)(-11)}}{2(1)}$

$\frac{-10 \pm \sqrt{100 + 44}}{2}$

$\frac{-10 \pm \sqrt{144}}{2}$

$\frac{-10 \pm 12}{2}$

$\frac{-10 + 12}{2} = \frac{2}{2} = 1$

$\frac{-10 - 12}{2} = \frac{-22}{2} = -11$

$\boxed{S \cdot S = \{-11, 1\}.}$

$x^2 + 10x - 11 = 0$

sum	prod
10	-11

$\# \ 11, -1$

$x^2 - 1x + 11x - 11 = 0$

$x(x-1) + 11(x-1) = 0$

$(x-1)(x+11) = 0$

$x = 1 \qquad x = -11$

$S \cdot S = \{-11, 1\}$

2. Vertex, axis of symmetry

$(h, k) \quad h = \frac{-b}{2a} \quad k = \frac{4ac - b^2}{4a}$

AOS: $\boxed{x: -\frac{b}{2a} = h}$

$y = x^2 + 10x - 25 \qquad a = 1 \quad b = 10 \quad c = -25$

$h = \frac{-(10)}{2(1)} = \frac{-10}{2} = -5 \qquad \boxed{h = -5}$

$k = \frac{4(1)(-25) - (10)^2}{4(1)} = \frac{-100 - 100}{4} = \frac{-200}{4} = -50$

$\boxed{k = -50}$

AOS: $\boxed{x = -5}$

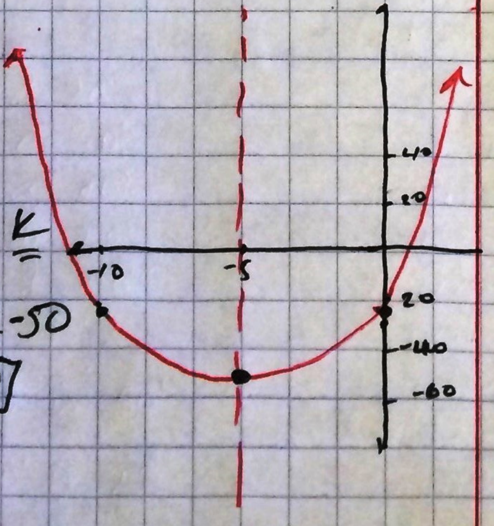
vertex form:

$y = a(x-h)^2 + k$

$y = 1(x-(-5))^2 + -50$

$\boxed{y = 1(x+5)^2 - 50}$

$(0, -25$



x=5

Complex # math II only

1. simplify

$Z_1 = 2 + 3i$

$Z_2 = -6 - 5i$

$Z_1 + Z_1 = (2 + 3i) + (-6 - 5i)$

$(-4 - 2i)$

$Z_1 - Z_2 = (2 + 3i) - (-6 - 5i)$

$2 + 3i + 6 + 5i$

$\underline{\underline{8 + 8i}}$

$Z_1 \cdot Z_2 = (2 + 3i)(-6 - 5i)$

$= -12 - 10i - 18i - 15i^2$

$-12 - 18i - 15(-1)$

$-12 - 18i + 15$

$\boxed{3 - 18i}$

(2) $i^{85} = ?$ 85 goes 4 evenly 21 times with left over of 1

$\therefore i^{85} = i^1 = \underline{\underline{i}}$

(3) $x^2 - 10x + 30 = 0$

$a = 1 \quad b = -10$
$c = 30$

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{-(-10) \pm \sqrt{(-10)^2 - 4(1)(30)}}{2(1)}$

$\frac{10 \pm \sqrt{100 - 120}}{2}$

$\frac{10 \pm \sqrt{-20}}{2}$

$\frac{10 \pm 2\sqrt{5}\, i}{2}$

split

$\frac{10}{2} \pm \frac{2\sqrt{5}}{2} i$

$= \boxed{5 + \sqrt{5}\, i}$

and

$\boxed{5 - \sqrt{5}\, i}$