

Day 14 NY

$$x^2 - 5x + 4 = 0$$

$$x_1 x_2 = 4 \Rightarrow x_1 = 4$$

$$x_1 + x_2 = 5 \Rightarrow x_2 = 1$$

Orbiter: 4 NY

$$x^2 - 5x + 2 = 0$$

$$x_1 x_2 = 2 \Rightarrow x_1 = 2$$

$$x_1 + x_2 = 5 \Rightarrow x_2 = 3$$

Orbiter: 1 NY

$$x^2 - 13x + 12 = 0$$

$$x_1 x_2 = 12 \Rightarrow x_1 = 12$$

$$x_1 + x_2 = 13 \Rightarrow x_2 = 1$$

Orbiter: 1, 12

NY

$$x^2 + 14x + 45 = 0$$

$$x_1 x_2 = 45 \Rightarrow x_1 = -5$$

$$x_1 + x_2 = -14 \Rightarrow x_2 = -9$$

Orbiter: -5, -9

NY

$$x^2 + 3x - 40 = 0$$

$$x_1 x_2 = -40 \Rightarrow x_1 = -10$$

$$x_1 + x_2 = -3 \Rightarrow x_2 = 7$$

Orbiter: -10, 7

NY

$$x^2 - 12x + 35 = 0$$

$$x_1 x_2 = 35 \Rightarrow x_1 = 5$$

$$x_1 + x_2 = 12 \Rightarrow x_2 = 7$$

Orbiter: 5, 7

$$\frac{2x-1}{x-1} = \frac{7x-1}{2x+2}$$

$$(2x-1)(2x+2) = (7x-1)(x-1)$$

$$4x^2 + 4x - 2 = 7x^2 - 7x - x + 1$$

$$-3x^2 + 10x - 3 = 0 \quad | : (-1)$$

$$3x^2 - 10x + 3 = 0$$

$$D = 10^2 - 4 \cdot 3 \cdot 3 = 64 = 8^2$$

$$x_1 = \frac{-6 \pm 8}{2 \cdot 3} = \frac{10 \pm 8}{6} \Rightarrow \begin{cases} x_1 = \frac{18}{6} = 3 \\ x_2 = \frac{2}{6} = \frac{1}{3} \end{cases}$$

Orbiter: 3, 1/3

$$x^4 - 3x^2 - 4 = 0$$

$$(x^2)^2 - 3x^2 - 2^2 = 0$$

Binomial - 10 aug. wrg. : $ax^2 + bx + c = 0$; $\frac{d \cdot a \cdot c}{b^2 - 4ac} = 1$

$$d \cdot c = -3 = -4 \Rightarrow d = -1$$

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

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

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

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

$$x = 2; x = -2; x^2 + 1 = 0 \Rightarrow x^2 = -1 \Rightarrow \emptyset$$

Orbits: $-2, 2$

$$(1 + x)(14 + x) = 304$$

$$11 \cdot 14 + 11x + 14x + x^2 - 304 = 0$$

$$x^2 + 25x - 150 = 0$$

$$x_1, x_2 = -150$$

$$x_1 + x_2 = -25$$

Orbits: $-30, 5$

$$x^2 - 2ax + a^2 = 0$$

I $(x - a)(x - a) = 0$

$$x - a = 0$$

II $x^2 - 2ax + a^2 = 0$

$$\frac{x^2}{a^2} - \frac{2ax}{a^2} + \frac{a^2}{a^2} = 0$$

$$\frac{x^2}{a^2} - \frac{2x}{a} + 1 = 0$$

$$\frac{dx}{dt} = \frac{x^2}{a^2} + 1$$

$$\frac{1}{a} + \frac{x}{a} = \left(\frac{x}{a}\right)^2$$

$$\frac{1}{a} < \left(\frac{x}{a}\right)^2 + 1 - \frac{x}{a}$$

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

$$\frac{x^2}{a} - \frac{2x}{a} + \frac{a^2}{a} = 0$$

$$\frac{x^2}{a} - \frac{2x}{a} + a = 0$$

$$-\frac{2x}{a} = \frac{x^2}{a} - a$$

$$\frac{x}{a} =$$

$$\frac{x}{a} = ?$$

II $-2ax = -x^2 - a^2$

$$2ax = x^2 + a^2$$

$$x^2 - 2ax + a^2 = 0$$

$$(x - a)^2 = x^2 - 2ax + a^2$$

$$(x - a)(x - a) = 0$$

$$x - a = 0$$

$$x = a$$

$$\frac{dx}{dt} = ?$$

$$a^2 \cdot 6 = 1 \cdot 6 \cdot 3 = 4$$

$$\frac{dx}{dt} = \frac{6}{3} =$$

$$\frac{dx}{dt} = 4 \Rightarrow$$

$$\Rightarrow \frac{6}{3} \cdot 4 = 2$$