An ECG for Christmas

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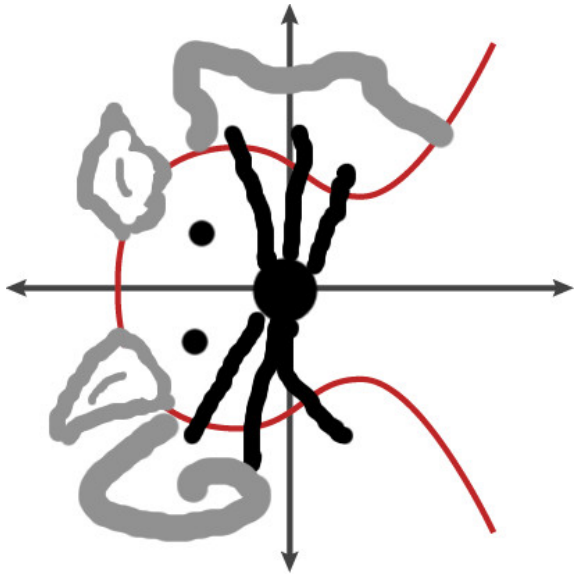
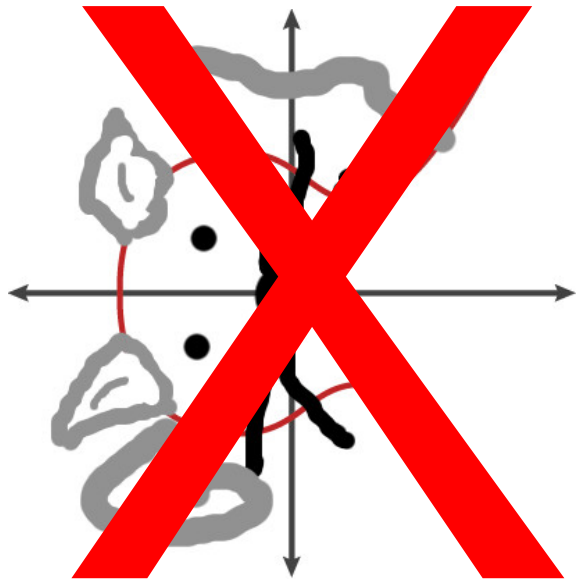
But what is an ECG?

An Elliptic Cat Generator?

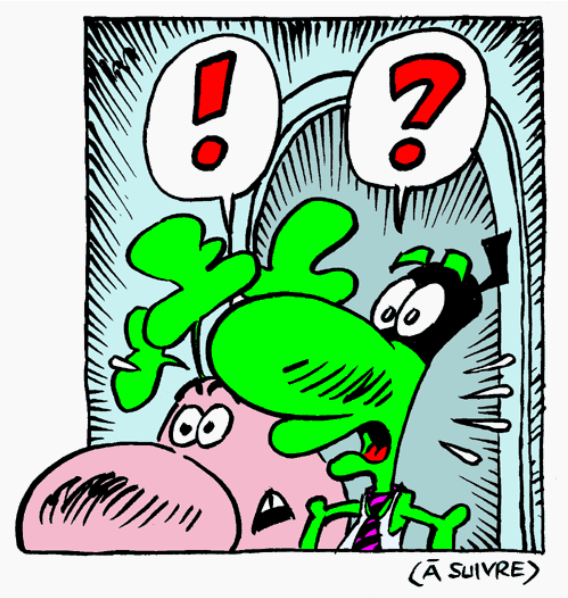


An Elliptic Cat Generator?

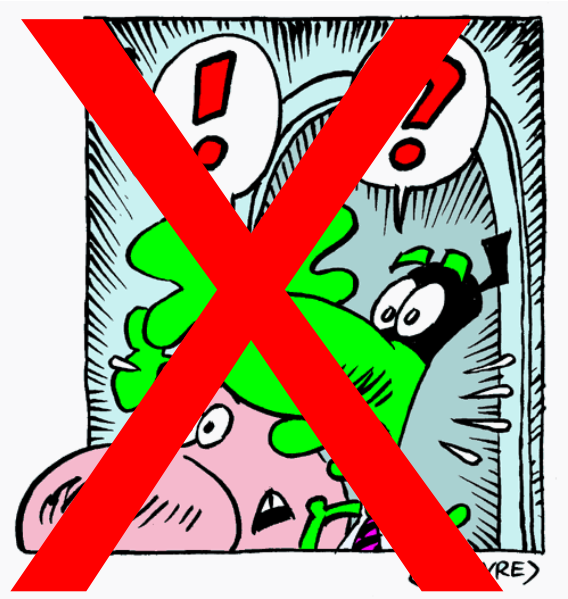
NO!



An Exceptional Cucumber Gardener?



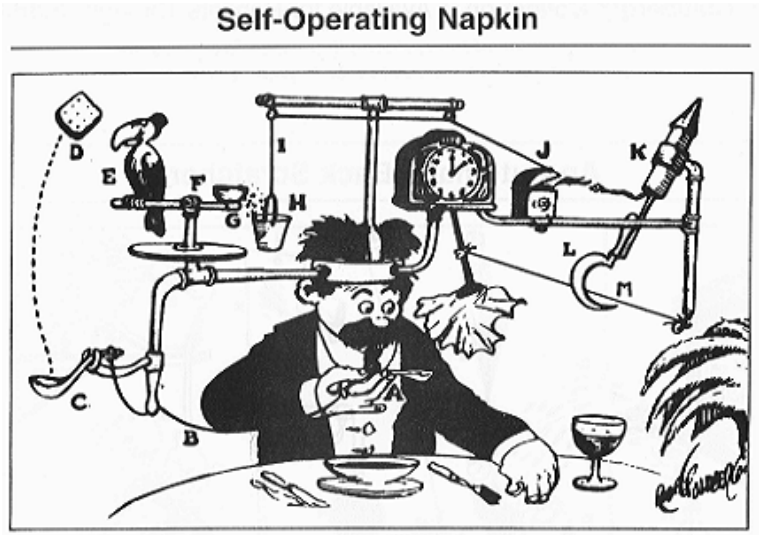
An Exceptional Cucumber Gardener?



NO!

An Extraordinary Complicated Gadget?

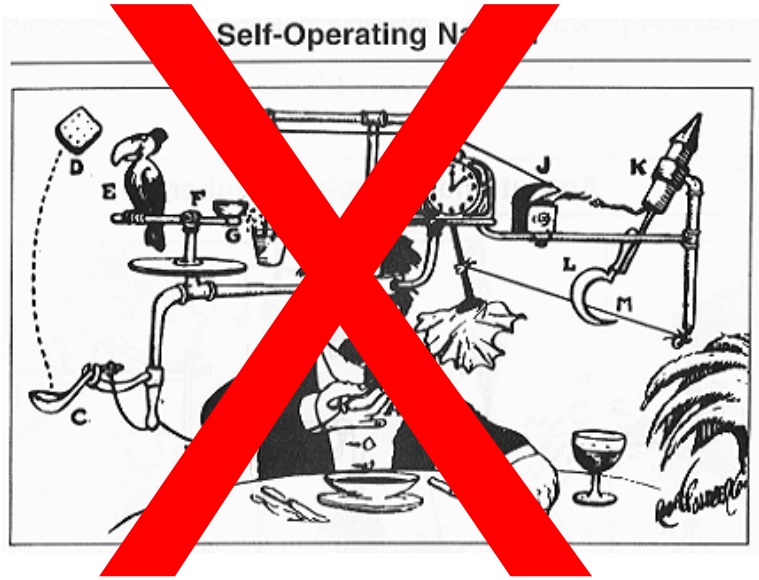
x



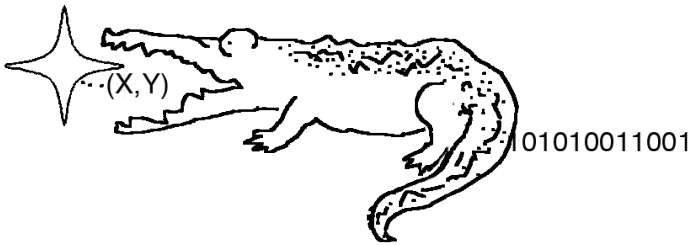
An Extraordinary Complicated Gadget?

x

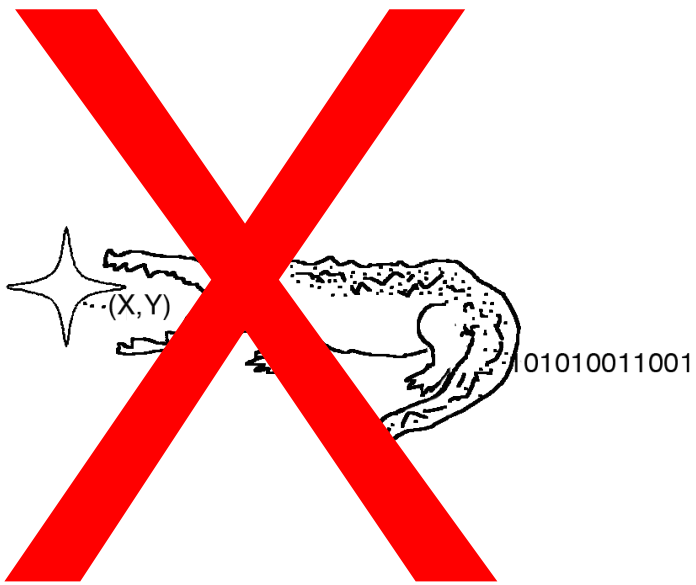
NO!



An Elligator Curve Generator?



An Elligator Curve Generator?



NO!

An Exciting Christmas Gift?

An Exciting Christmas Gift?

Maybe. . .

An Elliptic Curve Generator?

An Elliptic Curve Generator?

YES!

But what for?

But what for?

Generate curves for crypto together with certificates!

```
sage: ECG.generate_curve() [ENTER]
```

Curve

```
(2017, -3, 625)
order = 2063, point = (0, 25)
twist_order = 1973
disc_factors = {6043}
class_number = 9, form = (17,3,89)
embedding_degree = 1031, factors = {2, 1031}
twist_embedding_degree = 493, factors = {2, 17, 29}
```

Rejected curves

```
((2017, -3, 5), composite, 2065, witness, 1679, point, (1,258))
((2017, -3, 25), torsion_point, 3, point, (448, 288))
((2017, -3, 125), torsion_point, 2, point, (982, 0))
```

Powered by Sage(math), PARI/GP, ...

Coming for Christmas.

Coming for Christmas.

(Somewhere on the internet.)