Plotting circles in Scratch:


## when $m$ clicked

set pen color to
pen up
go to $\mathrm{x}:-235$ y: 0
pen down
go to $\mathrm{x}=235 \mathrm{y}: 0$
pen up
go to x: 0 y: 240
pen down
go to x: 0 y: -240
pen up

set | XV |
| :--- |
| to |
| -100 |

repeat 200
set $Y$ V to sqit - of 10000- $x$ * $x$
go to $\mathrm{x}: \mathrm{x}$ y: y
change $X$ by 1
pen down

set | $X V$ | to 100 |
| :--- | :--- |

repeat 201
set $\sqrt{\mathrm{V}-\mathrm{T}}$ to -1 * $\sqrt{\text { abs } \mathrm{V}}$ of sqit T of $10000-\mathrm{x} * \mathrm{x}$

$$
\text { go to } x: x y=y
$$

change $X V$ by -1
$\underbrace{}_{-}$



The above program draws a line by drawing 401 small lines.

The program below simply uses dots, which results in gaps in the circle...


Notes:

1. Neither one of the aforementioned methods is very good, albeit the first does create a better circle than the second; however, both are VERY SLOW -- listen for typical methods used in commercial graphics packages during the lecture.
2. PLEASE NOTE: Plotting graphics in Scratch is very energy intensive, i.e. will drain batteries on laptops rather quickly; I highly suggest that a power source, beyond just batteries, be available when running these programs and doing the dart program.
