28 Pixel and edge-table states

The aim of this question is to try to understand the main points and make them clear. For background, read either Foley Section 3.5.3 or Rowe textbook on pages 27–29 that covers similar examples.

(b) Algorithm only.

ET stands for edge table. AET stands for active edge table.

1. set \( y \) to smallest \( y \) in ET
2. initialize AET as empty
3. repeat until AET and ET are both empty
   (a) move ET bucket to AET
   (b) sort AET on \( x \)
   (c) fill pixels on scan line with coordinate pairs
   (d) remove edges from AET where \( y = y_{max} \)
   (e) update each edge by adding its slope to \( x \)
   (f) increment \( y \) by 1 to next scan line

(c) Edge Table

![Edge Table Diagram]
Active Edge Table

\[
y = 5 \quad \rightarrow \quad 13 \quad 0 \quad 0 \quad \rightarrow \quad 9 \quad 0 \quad 8 \quad \rightarrow \quad 9 \quad -2 \quad 16 \quad \rightarrow \quad 13 \quad 0.5 \quad 16
\]

Pixel(0.5)-pixel(8.5) and pixel(16.5)

\[
y = 6 \quad \rightarrow \quad 13 \quad 0 \quad 0 \quad \rightarrow \quad 9 \quad 0 \quad 8 \quad \rightarrow \quad 9 \quad -2 \quad 14 \quad \rightarrow \quad 13 \quad 0.5 \quad 16.5
\]

Pixel(0.6)-pixel(8.6) and pixel(14.6)-pixel(16.6)

\[
y = 11 \quad \rightarrow \quad 13 \quad 0 \quad 0 \quad \rightarrow \quad 13 \quad 0.5 \quad 19
\]

Pixel(0.11)-pixel(19.11)