

* Page 138 # 3c - find asymptotes

$$y = \frac{2e^x}{e^x - 5}$$

Vertical: we need denominator to be close to zero

$$\lim_{x \rightarrow 1.6} e^x - 5 = 0$$

$$e^x - 5 = 0$$

$$e^x = 5$$

$$\ln(e^x) = \ln(5)$$

$$x = \ln(5)$$

$$\approx 1.61$$

Horizontal:

$$y = \frac{2e^x}{e^x - 5}$$

both have limits of ∞

$$\frac{2e^x}{e^x} = 2 \text{ numerator}$$

$$\frac{e^x - 5}{e^x} = 1 - 5e^{-x} \text{ denominator}$$

$$\frac{2}{1 - 5e^{-x}}$$

so as $x \rightarrow \infty$

$(-5e^{-x})$ gets smaller

$$\frac{2}{1} = 2$$

