§ 2.3

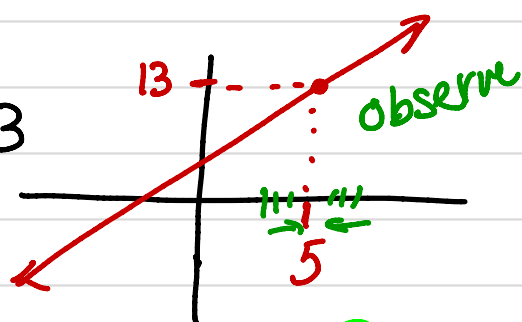Goals: • Develop $\boxed{\text{algebraic}}$ methods for evaluating limits

(Compared with graphical or numerical methods)

• Develop some _general_ rules & techniques

• Mini - example: Find $\lim\limits_{x \to 5} 2x+3 = \boxed{}$

$\boxed{\text{§ 2.1/2.2 method}}$ Graph $y=2x+3$

observe

13

5

Ans: $\lim\limits_{x \to 5} 2x+3 = 15$ ← Same answer!

$\boxed{\text{§2.3 Method}}$ $\lim\limits_{x \to 5} 2x+3 = 2(5) + 3 = 15$

What about this method should make you suspicious?

① You know the limit isn't supposed to care about what happens at 5 !!

② You can see right now, this isn't always going to work !!

(an asymptote? a hole? a big jump?)

Extra Examples (if needed)

• $\lim\limits_{h \to 0} \dfrac{(-9+h)^2 - 81}{h}$

• $\lim\limits_{y \to 4} \dfrac{\frac{1}{y} - \frac{1}{4}}{y-4}$