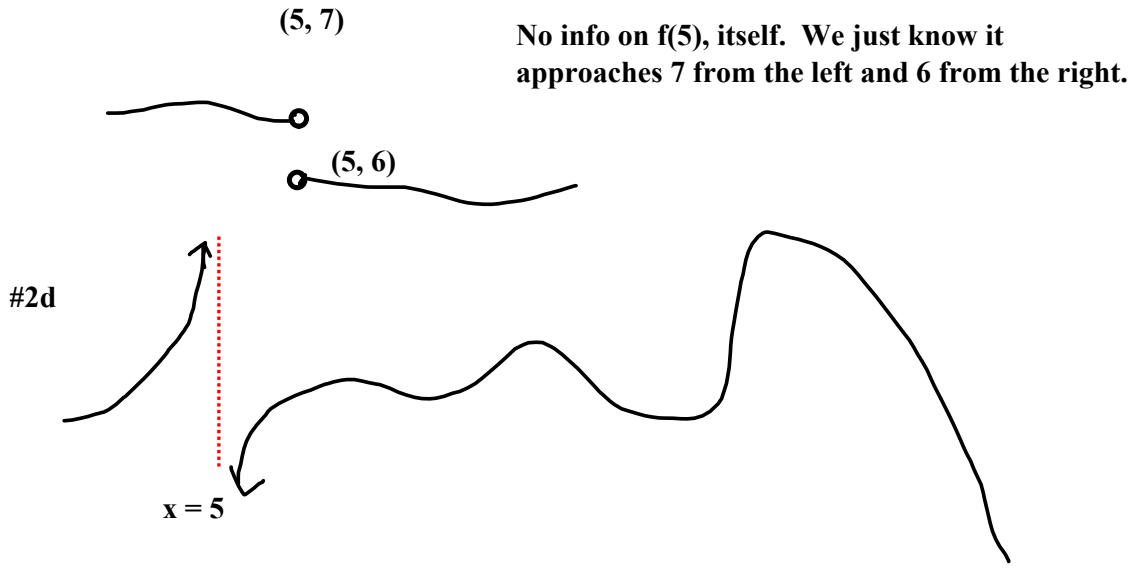
Note to self: Find the "upload answer" questions on WebAssign and get rid of them.

1.7 #s 12, 22

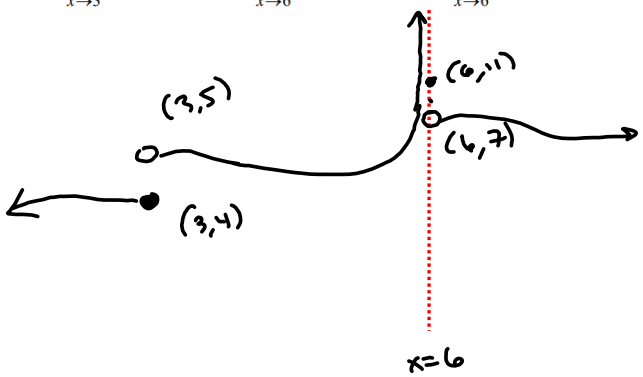
1.6 #30

The above WebAssign Exercises now count zero points. I left them in the assignment, to keep the Notes and Videos aligned with the

Give me advance warning, and I'll hook you up at other campuses.



4. (5 pts) Sketch the graph of a function that satisfies all of the conditions:
$\lim_{x\to 3^-}(f(x))=4,\ \lim_{x\to 3^+}(f(x))=5,\ \lim_{x\to 6^-}(f(x))=\infty,\ \lim_{x\to 6^+}(f(x))=7$, with $f(3)=4$ and $f(6)=11$.



a. (5 pts) $\lim_{x\to 3}\left(\dfrac{x^2+x-6}{x^2-14x+45}\right)$

$\dfrac{x^2+x-6}{x^2-14x+45} = \dfrac{(x-3)(x+2)}{(x-9)(x-5)} \xrightarrow{x\to 3} \dfrac{0(5)}{(-6)(-2)} = \dfrac{0}{12} = 0$

b. (5 pts) $\lim_{x\to 5}\left(\dfrac{x^2+x-6}{x^2-14x+45}\right)$

$\dfrac{x^2+x-6}{x^2-14x+4} = \dfrac{(x+2)(x-3)}{(x-9)(x-5)} \xrightarrow{x\to 5} \dfrac{\sim}{0}$ A

3. (5 pts) Prove that $\lim_{x\to 3}(x^2+5x-7)=17$

$x\to 3$ → $x\to 2$

17 → 7

Claim: $\lim_{x\to 2}(x^2+5x-7)=7$

Scratch: $|f(x)-L| = |x^2+5x-7-7| = |x^2+5x-14|$

$= |x+7||x-2|$

$|x-2| < \delta$

$|x+7|$ → Find bound

Assume $\delta \le 1$ and $0<|x-2|<\delta$

$\Rightarrow -1 < x < 3$

$\Rightarrow 6 < x+7 < 10$, i.e. $|x+7| < 10$

Proof Let $\varepsilon>0$ be given. Define $\delta = \min\{1, \frac{\varepsilon}{10}\}$.

Then $0<|x-2|<\delta$ implies

$|f(x)-L| = |x^2+5x-7-7| = |x^2+5x-14|$

$= |x-7||x-2| < 10\delta \le 10\cdot\frac{\varepsilon}{10} = \varepsilon$ ∎