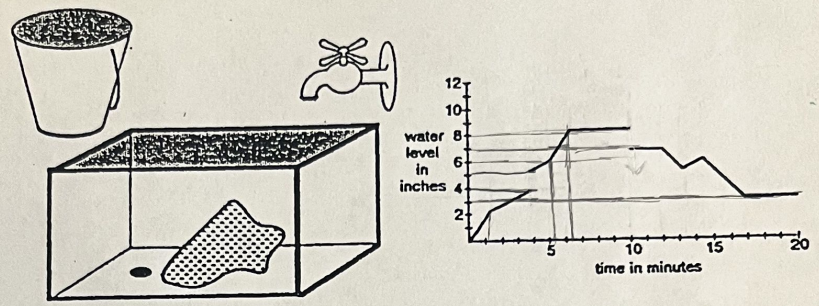
Aaron Meche

FIRST DAY BONUS - 10 POINTS

Below is an illustration of an aquarium along with a graph of its water level as a function of time. When the faucet is on, the water level rises at a steady rate. Similarly, when the plug is pulled out, the water level falls at a steady rate (but slower than the faucet's rate). At various times some events happen that affect the water level and/or the rate at which the water level changes. In exercises 16-25 you are asked to identify at exactly what time the given event occurred.

f = on
↳ m = 4 ex



16. The plug is pulled out with the faucet turned off. 12 minutes
17. A large rock is pulled out of the aquarium. 10 minutes
18. The plug is pulled out with the faucet turned on. 1.5 minutes
19. The plug is put in with the faucet turned off. 17 minutes
20. The plug is put in with the faucet turned on. 5 minutes
21. The faucet is turned on with the plug in. 0 minutes
22. The faucet is turned on with the plug out. 13 minutes
23. A bucket of water is dumped into the aquarium all at once. 4 minutes
24. The faucet is turned off with the plug in. 6.5 minutes
25. The faucet is turned off with the plug out. 14.5 minutes

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26. Now, assume that the rock is placed back in the aquarium at $t = 20$ minutes and the faucet is turned back on. Suppose that the aquarium is 12 inches deep. When will the aquarium overflow? I assume this is an intro. to limits, $t > 24$

NOTE: Work is stapled to the back, words are wrong (according to answers on this page), I just didn't feel like rewriting words on work

Aaron Medve
time in minutes
1 1.5 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
plug in, faucet on
bucket
plug out, faucet on
plug in, faucet off
Race out
plug out, faucet off
faucet on, plug out
plug out, faucet off, plug out
faucet off, plug in
T P

rock = 1 inch

E(20) = 3 inch

(+) rock = 4 inches

~~P~~ F

m = 2