WATER TOWER

Bet you can lift water in an upside-down glass!

THE SETUP
This is a good trick to do in the bathtub. Fill a tall glass by completely submerging it in water. Get all the air out. Then turn it upside down under the water. Lift it, bottom up, above the surface until only the mouth of the glass is under the water. The water will stay in the glass, rising high above the surface of the bath.

INSIDER INFORMATION
If you had a taller glass you could lift the water even higher. You could lift it thirty-three feet if you had a glass that tall. Air pressure holds up your water tower. There is no air in the glass, so nothing is pressing down on the water in the glass. But air pressure is pressing down on the surface of your bath, and this allows the column of water to rise thirty-three feet from the surface. An Italian physicist, Torricelli (1608-47), discovered this in 1643. He tried the same trick using mercury, which is thirteen times heavier than water. He found that the air pressure could support a column of mercury 760 millimeters high and that this length varied according to the weather. No kidding. On sunny days it was higher than on rainy days. In case you haven’t guessed, Torricelli’s mercury column was the first barometer or weather predictor.