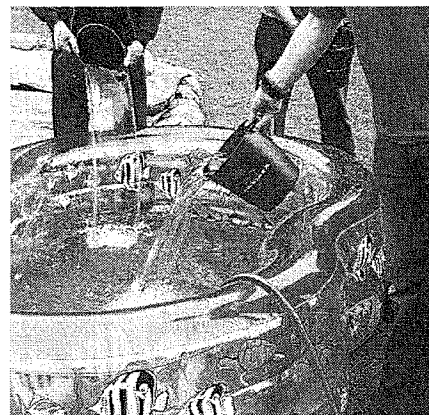


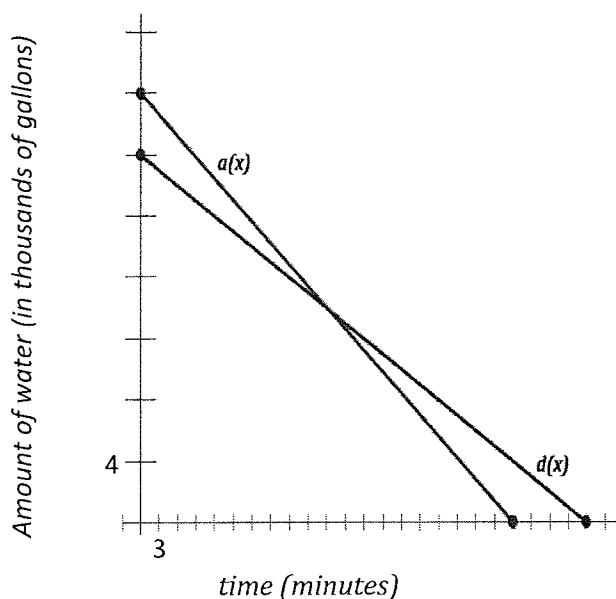
5.5 Pooling It Together

A Solidify Understanding Task

Aly and Dayne work at a water park and have to drain the water at the end of each month for the ride they supervise. Each uses a pump to remove the water from the small pool at the bottom of their ride. The graph below represents the amount of water in Aly's pool, $a(x)$, and Dayne's pool, $d(x)$, over time. In this scenario, they decided to work together to drain their pools and created the equation $g(x) = a(x) + d(x)$. Using the graph below showing $a(x)$ and $d(x)$, create a new set of axes and graph $g(x)$. Identify $g(x)$ and label (scale, axes).



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Answer the following questions about $g(x)$.

1. What does $g(x)$ represent?
2. Name the features of $g(x)$ and explain what each means (each intercept, domain and range for this situation and for the equation, maxima and minima, whether or not $g(x)$ is a function, etc.)
3. Write the equation for $g(x)$ using the intercepts from the graph. Compare this equation to the sum of the equations created for $a(x)$ and $d(x)$ from "The Water Park" task. Should they be equivalent? Why or why not?

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When combining functions, a lot of connections can be made. Make at least three connections showing how the equations $a(x)$, $d(x)$, and $g(x)$ relate to the graphs of $a(x)$, $d(x)$, and $g(x)$. (hint: think about the key features of these functions).

For A Twist:

If Aly and Dayne's boss started to drain the water before they arrived and when they got there, there was already 5,000 less gallons of water to be drained, how would this impact the equation?

Write the new equation representing how long it will take them to drain the two pools.

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