

**Practice Quiz Key — MA16020 — February 7, 2018**

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Min	Mean	Max
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A tank initially contains 50 liters of water. Sugary syrup, with a concentration of 100 grams of sugar per liter of water, is added to the tank at a rate of 4 liters per minute. Water drains out of the tank at 6 liters per minute.

1. (2 points) How long will it be until the tank is empty?

25 minutes

2. (3 points) Write a differential equation to describe the amount of sugar in the tank. Choose appropriate letters for your variables.

$$\frac{dS}{dt} = 400 - \frac{6S}{50 - 2t}$$

3. (5 points) Find the integrating factor for the differential equation you found in part 2. Simplify your answer completely.

$$\frac{1}{(50 - 2t)^3}$$