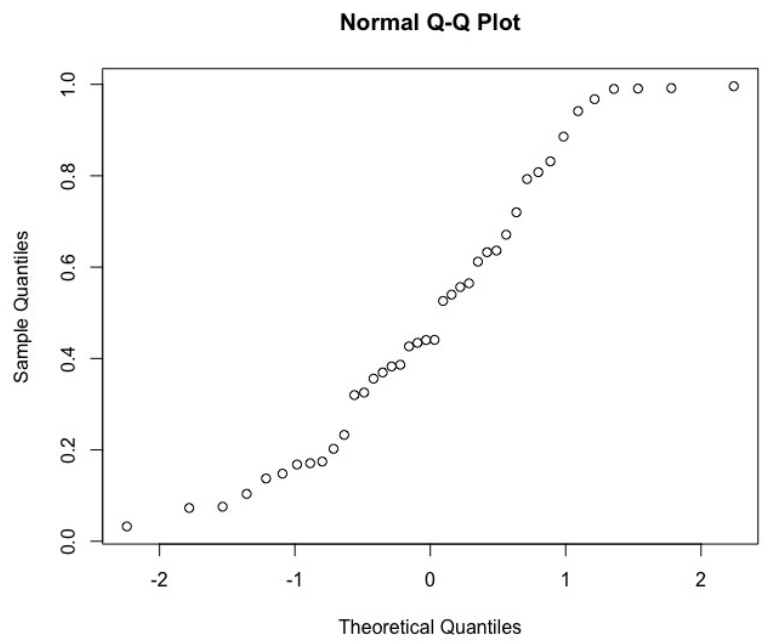
Problem 2

(a)

1.0/1.0 point (graded)



Refer to the QQ-plot above. Which of the following best represent the support of the distribution underlying the data?

- ◉ $(0, 1)$ ✔
- ○ $(-2.3, 2.3)$
- ○ $(-2, 1)$
- ○ $\mathbb{R}$

Does the distribution underlying the data have a heavier or lighter right tail than a Gaussian distribution?

- ○ heavier
- ◉ lighter ✔

Solution:

- Recall that the points on a normal QQ-plot are $(x, y) = \left(\Phi^{-1}\left(i/n\right), X_{(i)}\right)$ where Φ is the cdf of the standard normal distribution and $X_{(i)}$ is i^{th} largest data point in the sample. Hence, the range of the y-values on the QQ-plot gives a visual estimate of the support of distribution underlying the data, which is $[0.1]$ in this case.

- The QQ-plot "flattens" on its right side; this means the quantiles of the empirical quantiles are smaller than the normal distribution at the right tail of the distributions. This is the case only if the distribution underlying the data has a lighter right tail than that of the standard normal distribution.

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