Name:	Date:	Period:

Lab20: Square Root Calculation

- Babylonian, YBC 7289

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- We want to find x where $x = \sqrt{2}$ or $x^2 = 2$.

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- Generate a sequence of approximations x_0, x_1, x_2, x_3,... x_n.

- Use the *very bad* initial guess $x_0 = 5$.

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- $x^2 = 2$

- $x * x = 2$

- $x = 2/x$

- $x + x = x + 2/x$

- $2x = x + 2/x$

- $x = 0.5 * (x + 2/x)$

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- $x_0 = 5$

- $x_1 = 0.5 * (x_0 + 2/x_0)$

- $x_2 = 0.5 * (x_1 + 2/x_1)$

- $x_3 = 0.5 * (x_2 + 2/x_2)$

- etc

- $x_n = 0.5 * (x_{n-1} + 2/x_{n-1})$

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- Plot $y = x$ and $y = 0.5 * (x + 2/x)$ alongside a cobweb plot of this sequence.