

Name _____

Score _____/6

Last name, First Name Please Print Clearly

This assignment consists of four pages. All four pages are to remain stapled and turned in together.

Your submitted work should NOT be your first draft. Work the problem and then NEATLY copy your best work onto the three assignment pages. Write on the lines provided!

Your work MUST be modeled after the Sample Problem presented on this first page. That includes all the words. Remember it is the logic which SOLVES the problem NOT arbitrary/random/trial-and-error arithmetic computations.

DO NOT use a calculator. DO NOT use decimal approximations.

ABOVE ALL -- Think about what you are doing!

Sample Problem: Find the rule of the linear function for which $f(-2) = \frac{3}{5}$ and $f\left(\frac{1}{2}\right) = -1$.

Analysis: Since the desired function is linear its rule has the form $f(x) = mx + b$ and its graph is a line.

Since $f(-2) = \frac{3}{5}$, the point $\left(-2, \frac{3}{5}\right)$ is on the graph.

Since $f\left(\frac{1}{2}\right) = -1$, the point $\left(\frac{1}{2}, -1\right)$ is on the graph.

The slope of the line through the two points is $m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{-1 - \frac{3}{5}}{\frac{1}{2} - (-2)} = \frac{-\frac{8}{5}}{\frac{5}{2}} = \left(-\frac{8}{5}\right)\left(\frac{2}{5}\right) = -\frac{16}{25}$.

Therefore the form of the rule for the desired function is $f(x) = -\frac{16}{25}x + b$

Since $f\left(\frac{1}{2}\right) = -1$, we have $-1 = f\left(\frac{1}{2}\right) = \left(-\frac{16}{25}\right)\left(\frac{1}{2}\right) + b = \left(-\frac{8}{25}\right) + b$

The y-intercept b may be determined by solving this equation.

$$-1 = \left(-\frac{8}{25}\right) + b$$

$$b = -1 + \frac{8}{25} = -\frac{17}{25}$$

Finally the rule for the desired function is $f(x) = -\frac{16}{25}x - \frac{17}{25}$

