Writing Rules (Equations) – Worksheet #9

Write a rule (equation) for each. Remember the two pieces of information you’ll need before you can write that equation!!

1) \( y = -2x + 6 \)

2) \( y = -\frac{1}{3}x + 4 \)

3) \( y = -\frac{9}{4}x + 3 \)

4) \( y = \frac{1}{4}x + 11.5 \)

5) has a slope of 4, and passes through (7, 16)

6) has a slope of \(-\frac{1}{2}\), and passes through (-10, -3)
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Write a rule (equation) for the line passing through the given points.

7) passes through (-5, 2) and (-1, 10)

\[ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 2}{-1 - (-5)} = \frac{8}{4} = 2 \]

\[ y = mx + b \]

\[ 2 = 2(-5) + b \]
\[ 2 = -10 + b \]
\[ +10 +10 \]
\[ 12 = b \]

\[ y = 2x + 12 \]

8) passes through (4, 5) and (8, 3)

\[ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 5}{8 - 4} = \frac{-2}{4} = -\frac{1}{2} \]

\[ y = mx + b \]

\[ 5 = -\frac{1}{2} \cdot 4 + b \]
\[ 5 = -2 + b \]
\[ +2 +2 \]
\[ 7 = b \]

\[ y = -\frac{1}{2}x + 7 \]

9) passes through (6, 0) and (8, -12)

\[ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-12 - 0}{8 - 6} = \frac{-12}{2} = -6 \]

\[ y = mx + b \]

\[ 0 = -6 \cdot 6 + b \]
\[ 0 = -36 + b \]
\[ +36 +36 \]
\[ 36 = b \]

\[ y = -6x + 36 \]

10) passes through (7, -8) and (7, 21)

\[ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{21 - (-8)}{7 - 7} = \frac{29}{0} \rightarrow \text{undefined} \]

\[ x = 7 \]