



Name

Score

Solve and show all steps.

<p>Consider the linear function $y = 3x - 5$.</p> <p>a) What is the slope of this function? b) What is the y-intercept of this function? c) Is the line increasing, decreasing, or horizontal? Explain your reasoning.</p>	<p>Show all steps here</p>
<p>A linear function passes through the points (2,7) and (5,16).</p> <p>a) Calculate the slope of this function. b) Find the equation of the line in slope-intercept form ($y=mx+b$).</p>	<p>Show all steps here</p>
<p>For the linear function $f(x)=-2x+8$</p> <p>a) What is the x-intercept? (Show your work) b) If the domain of the function is all real numbers, describe the range.</p>	<p>Show all steps here</p>
<p>Explain the difference between a positive slope and a negative slope in terms of how the line appears on a graph from left to right. Provide a simple example equation for each.</p>	<p>Show all steps here</p>
<p>A local gym charges a one-time enrollment fee of \$50 and then \$30 per month for membership.</p> <p>a) Write a linear function $C(m)$ that represents the total cost (C) after 'm' months of membership. b) What does the slope of this function represent in the context of the problem? c) What does the y-intercept of this function represent in the context of the problem?</p>	<p>Show all steps here</p>



Solve and show all steps.

- a) The slope (m) is the coefficient of x . So, the slope is **3**.
b) The y -intercept (b) is the constant term. So, the y -intercept is **-5** (or the point $(0, -5)$).
c) The line is **increasing**. This is because the slope (3) is positive. A positive slope indicates that as the x -values increase, the y -values also increase, causing the line to go upwards from left to right.

- a) The slope is **3**.
b) The equation of the line is $y = 3x + 1$.

- a) The x -intercept is **4** (or the point $(4, 0)$).
b) **If the domain of the function is all real numbers, describe the range.** For any linear function (that is not horizontal or vertical) with a domain of all real numbers, the range is also **all real numbers**. This means the graph extends infinitely upwards and downwards.

A **positive slope** means that as you move from left to right on the graph, the line goes **upwards**. This indicates that as the independent variable (x) increases, the dependent variable (y) also increases.
A **negative slope** means that as you move from left to right on the graph, the line goes **downwards**. This indicates that as the independent variable (x) increases, the dependent variable (y) decreases.

- a) $C(m) = 30m + 50$
b) The slope (30) represents the **monthly cost of the gym membership**. It's the rate at which the total cost increases for each additional month.
c) The y -intercept (50) represents the **initial one-time enrollment fee** charged by the gym. This is the cost incurred even before any months of membership have passed (when $m=0$).