

NAME: \_\_\_\_\_ Score \_\_\_\_\_/15

1. Fill in the blanks.

**Problem:**

Use the point-slope form of the equation of a line to determine the rule for the linear function  $f$  whose graph has slope 3 and passes through the point  $(2, -7)$ .

**Process:**

Use the point-slope formula  $y - y_1 = m(x - x_1)$  to obtain  $y + 7 = 3(x - 2)$ .

Solve that equation for  $y$  to obtain  $y = 3x - 6 - 7$

Simplify (if necessary) that equation  $y = 3x - 13$

Use function notation to write the rule for the function  $f$ .  $f(x) = 3x - 13$

2) Fill in the blanks

**Problem:**

Determine the rule for the linear function  $f$  whose graph has slope 3 and passes through the point  $(2, -7)$ . Do not use the point-slope formula.

**Process:**

Because the function is linear, its rule has the form  $f(x) = mx + b$ .

The slope of the graph is 3, so the rule has the form  $f(x) = 3x + b$  (\*)

Because the point  $(2, -7)$  is on the graph of the function,  $f(2) = -7$ .

However, from equation (\*) we obtain  $f(2) = 3(2) + b = 6 + b$ .

We now have two expressions for the same quantity and from The **Transitive** Property we conclude they must be **equal**.

Therefore  $6 + b = -7$  from which it follows that  $b = -13$ .

Use equation (\*) and  $b = -13$  to conclude

The rule for the function  $f$  is  $f(x) = 3x - 13$ .