

9.2 – Review for Linear Functions Test

Functions

Find the function value:

1. $f(x) = 2x + 1$
 $f(12)$

$$f(12) = 2(12) + 1$$

$$f(12) = 24 + 1$$

$$f(12) = 25$$

2. $g(x) = -3x + 14$
 find $g(-7)$

$$g(-7) = -3(-7) + 14$$

$$g(-7) = 21 + 14$$

$$g(-7) = 35$$

Find x:

3. $f(x) = 2x + 1$
 Find x if $f(x) = 12$

$$12 = 2x + 1$$

$$-1 \quad -1$$

$$\frac{11}{2} = \frac{2x}{2}$$

$$\frac{11}{2} = x$$

4. $g(x) = -3x + 14$
 Find x if $g(x) = 60$

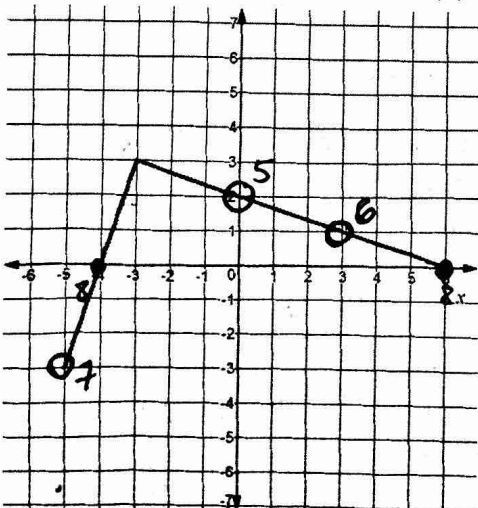
$$60 = -3x + 14$$

$$-14 \quad -14$$

$$\frac{46}{-3} = \frac{-3x}{-3}$$

$$\frac{-46}{3} = x$$

Answer by referring to the graph of $h(x)$, given below:



5. Find $h(0) = 2$

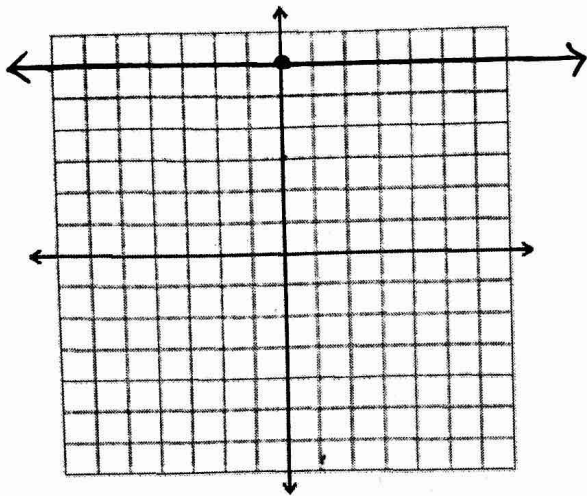
6. Find $h(3) = 1$

7. Find x if $h(x) = -3$ $x = -5$

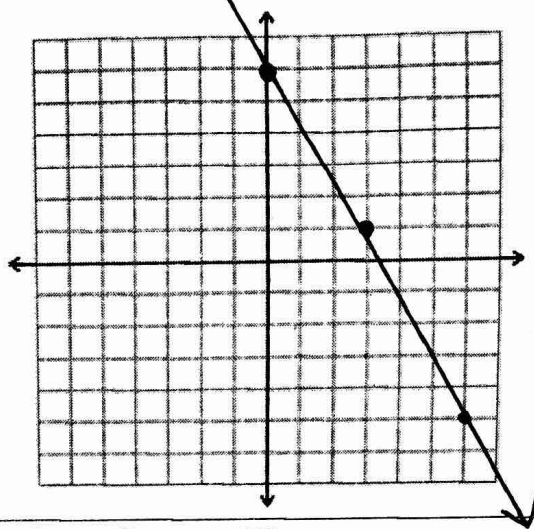
8. $0 = h(6) = h(-4)$

Graph Linear Functions

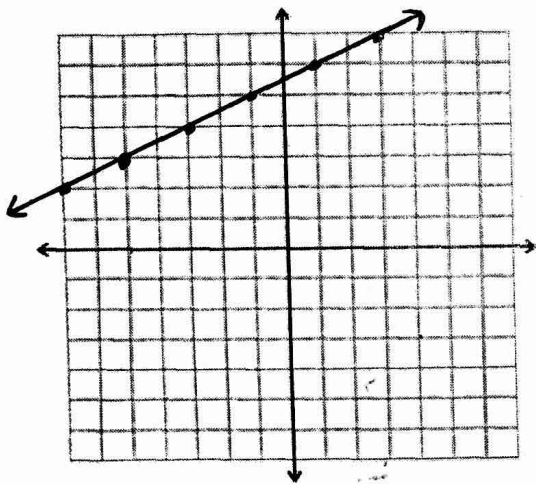
9. $y = 6$ all y-coordinates are 6.



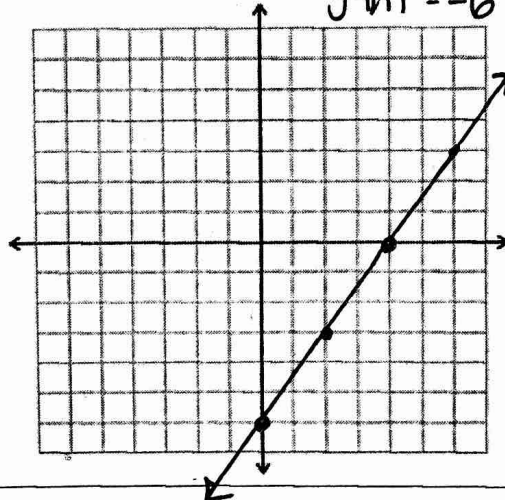
10. $y = -\frac{5}{3}x + 6$ (0, 6) $m = -\frac{5}{3}$



11. $y - 3 = \frac{1}{2}(x + 5)$ (-5, 3) $m = \frac{1}{2}$



12. $-3x + 2y = -12$ x-int = 4
y-int = -6



Extra Practice: Textbook Sections 3-1, 4-1

Find Intercepts

Find the x and y-intercepts of each:

13. $12x - 6y = 30$

$x = 0 \rightarrow -6y = 30$
 $y = -5$ $y\text{-int} = (0, -5)$

$y = 0 \rightarrow 12x = 30$
 $x = \frac{30}{12}$ $x\text{-int}$
 $x = \frac{15}{6}$ $(\frac{5}{2}, 0)$
 $x = \frac{5}{2}$

14. $y - 4 = 6(x + 3)$

$x = 0 \rightarrow y - 4 = 6(0 + 3)$ $y\text{-int}$
 $y - 4 = 6(3)$ $(0, 22)$
 $y - 4 = 18$
 $y = 22$

$y = 0 \rightarrow 0 - 4 = 6(x + 3)$
 $-4 = 6x + 18$ $x\text{-int}:$
 $(-\frac{11}{3}, 0)$
 $-22 = 6x$
 $-\frac{22}{6} = x$
 $x = -\frac{11}{3}$

POINT SLOPE
 $y - y_1 = m(x - x_1)$

SLOPE INTERCEPT
 $y = mx + b$

Write Linear Function Equations

Write BOTH point-slope AND ~~standard form~~ ^{slope-intercept} for each:

1. The line through (2, 3) with a slope of $\frac{7}{2}$

$$y - 3 = \frac{7}{2}(x - 2)$$

$$y - 3 = \frac{7}{2}x - 7$$

+3 +3

$$y = \frac{7}{2}x - 4$$

2. The line through (-3, -2) that is parallel to the line $y = -x + 8$ $m = -1$

$$y + 2 = -1(x + 3)$$

$$y + 2 = -x - 3$$

$$y = -x - 5$$

3. The line through (5, -4) that is perpendicular to the line $y = -5x + 3$

$$m = +\frac{1}{5}$$

$$y + 4 = \frac{1}{5}(x - 5)$$

$$y + 4 = \frac{1}{5}x - \frac{1}{5}\left(\frac{5}{1}\right)$$

$$y + 4 = \frac{1}{5}x - 1$$

-4 -4

$$y = \frac{1}{5}x - 5$$

4. The line through the points (-4, -2) and (-2, 5)

$$m = \frac{\Delta y}{\Delta x} = \frac{5 - (-2)}{-2 - (-4)} = \frac{5 + 2}{-2 + 4} = \frac{7}{2}$$

EITHER: $y + 2 = \frac{7}{2}(x + 4)$ OR: $y - 5 = \frac{7}{2}(x + 2)$

$$y + 2 = \frac{7}{2}x + \frac{28}{2}$$

$$y + 2 = \frac{7}{2}x + 14$$

-2 -2

$$y = \frac{7}{2}x + 12$$

Prior Skills: Fractions**Add/Subtract**

15. $\frac{2}{3} - 10$

$$= \frac{2}{3} - \frac{10}{1} \left(\frac{3}{3}\right)$$

$$= \frac{2}{3} - \frac{30}{3} = \boxed{\frac{-28}{3}}$$

16. $\frac{12}{5} + \frac{9}{4}$

$$= \frac{12}{5} \left(\frac{4}{4}\right) + \frac{9}{4} \left(\frac{5}{5}\right)$$

$$= \frac{48}{20} + \frac{45}{20}$$

$$= \boxed{\frac{93}{20}}$$

Extra Practice: Kuta Software Pre-Algebra

- "Adding and subtracting fractions and mixed numbers"

Multiply/Divide

1. $\frac{2}{3} \cdot 10 = \frac{2}{3} \cdot \frac{10}{1}$

$$= \boxed{\frac{20}{3}}$$

2. $\frac{12}{5} \div \frac{9}{4} = \frac{12}{5} \cdot \frac{4}{9}$

$$= \frac{12 \cdot 4}{5 \cdot 9}$$

$$= \frac{\cancel{3} \cdot 4 \cdot 4}{\cancel{3} \cdot 3 \cdot 5} = \boxed{\frac{16}{15}}$$

Extra Practice: Kuta Software Pre-Algebra

- "Multiplying and dividing fractions and mixed numbers"

Prior Skills: Simplify and Solve**Simplify**

17. $-2(x + 5) + 6$

$$= -2x - 10 + 6$$

$$= \boxed{-2x - 4}$$

18. $\frac{3}{4}(x + 6) - 2$

$$= \frac{3}{4}x + \frac{18}{4} - 2$$

$$= \frac{3}{4}x + \frac{9}{2} - \frac{2}{1} \left(\frac{2}{2}\right)$$

$$= \frac{3}{4}x + \frac{9}{2} - \frac{4}{2}$$

$$= \boxed{\frac{3}{4}x + \frac{5}{2}}$$

Extra Practice: Kuta Software Pre-Algebra

- "Simplifying Variable Expressions" or "The distributive property"

Solve

19. $\frac{5}{7}x = -4$

$$\frac{7}{5} \cdot \frac{5}{7}x = -4 \cdot \frac{7}{5}$$

$$\frac{35}{35}x = \frac{-28}{5}$$

$$x = \boxed{\frac{-28}{5}}$$

20. $-\frac{3}{4}x + 2 = 5$

$$-\frac{3}{4}x = 3$$

$$-\frac{4}{3} \cdot -\frac{3}{4}x = \frac{3}{1} \cdot -\frac{4}{3}$$

$$\frac{12}{12}x = \frac{-12}{3}$$

$$x = \boxed{-4}$$

Extra Practice: Kuta Software Pre-Algebra

- "One-step equations containing integers" or "One-step equations containing fractions"

Not on this review:

- Interpreting functions in context (see team quiz, 6.1 DN, 6.2 HW, 7.2 HW)
- Review of key Statistics concepts (correlation coefficient, linear regression, box plots)