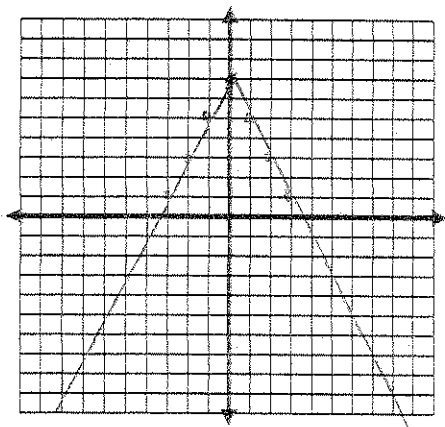


Name: Key

Unit 6 Study Guide

- Write the equation of a square root function that has been reflected over the x-axis, has been vertically shrunk by a factor of 2 and has been translated right 3 units. $f(x) = -2\sqrt{x-3}$ if you read as $f(x) = -\frac{1}{2}\sqrt{x-3}$ that is ok
- Write the equation of an absolute value function that has been vertically stretched by a factor of 3 and has (-4, 2) as its vertex. $f(x) = 3|x+4| + 2$
- Write the equation of a positive inverse variation function that has the asymptotes of $x=5$ and $y=-2$ and is a distance of 2 units away from the asymptotes. $f(x) = \frac{4}{x-5} - 2$
- Rewrite $\sqrt{16x+48} - 2$ to make it easy to graph using a translation. Describe the transformations on the graph. $\sqrt{16(x+3)} - 2 \rightarrow 4\sqrt{x+3} - 2$ Transf: mult: 4, stretch 4, left 3, down 2

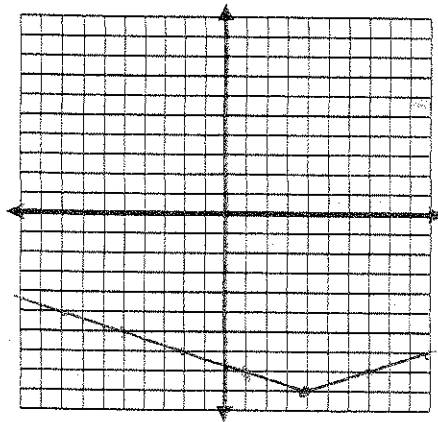
5. $y = -2|x| + 7$



Domain: All Reals

Range: $y \leq 7$

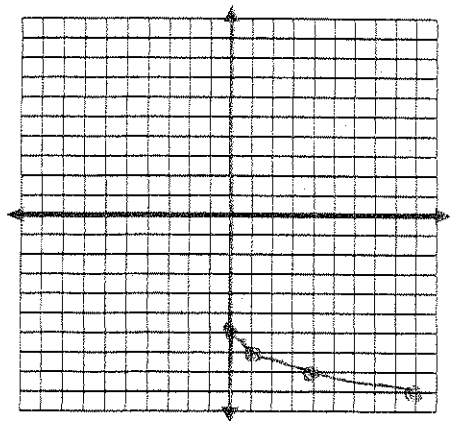
6. $y = \frac{1}{3}|x-4| - 9$



Domain: All Reals

Range: $y \geq -9$

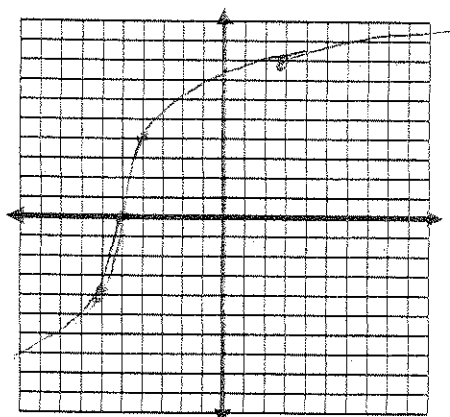
7. $y = -\sqrt{x} - 6$



Domain: $x \geq 0$

Range: $y \leq -6$

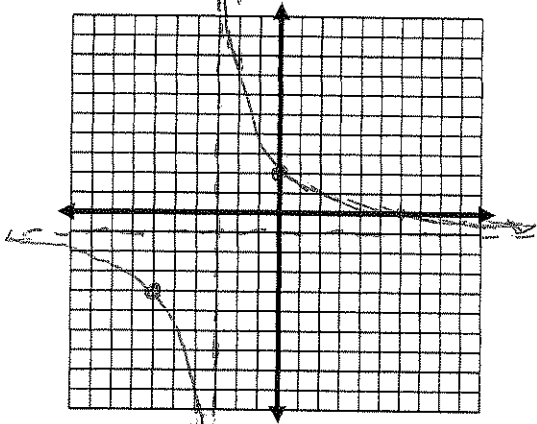
8. $y = 4\sqrt[3]{x+5}$



Domain: All Reals

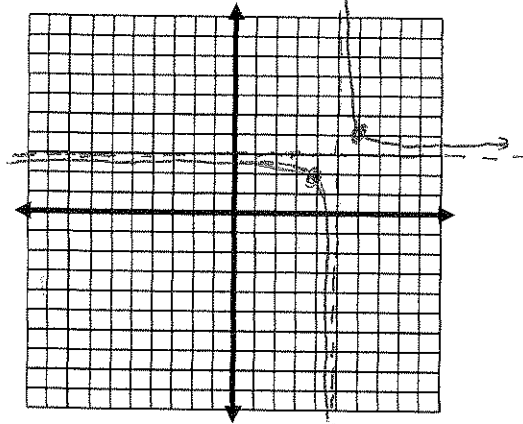
Range: All Reals

9. $y = \frac{9}{x+3} - 1$



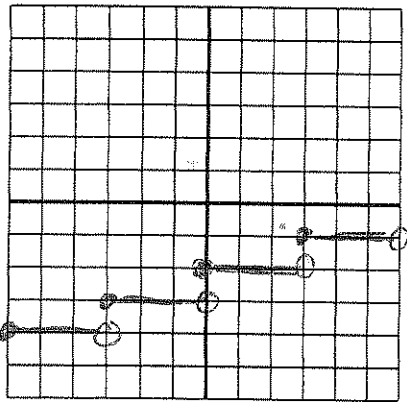
Asymptote(s): $x = -3$; $y = -1$

10. $y = -\frac{1}{x-5} + 3$

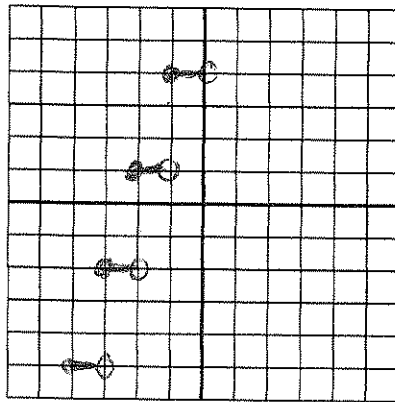


Asymptote(s): $x = 5$; $y = 3$

11. $y = \left\lfloor \frac{1}{3}x \right\rfloor - 2$

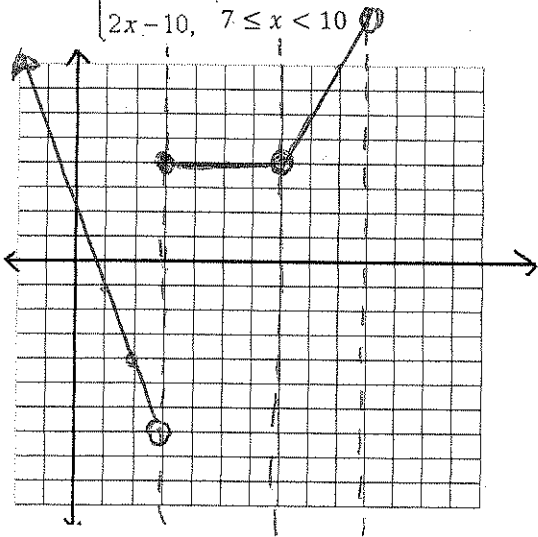


12. $y = 3[x + 1] + 4$



13. Graph the following piecewise function.

$$h(x) = \begin{cases} -3x+2, & x < 3 \\ 4, & 3 \leq x < 7 \\ 2x-10, & 7 \leq x < 10 \end{cases}$$



Evaluate the piecewise function above at $f(-5)$, $f(3)$, $f(6)$ and $f(13)$

$f(-5) = -3(-5) + 2 = 17$

$f(3) = 4$ $f(6) = 4$ $f(13) = \text{undefined}$

14. For the following function g , write the equation for each piece. Include the restricted domain values

AB: $m = \frac{-6}{2} = -3$

$y = 3x + b$

$-2 = 3(-1) + b$

$-2 = -3 + b$

$b = 1$

BC: $m = \frac{3}{2}$

$y = \frac{3}{2}x + b$

$1 = \frac{3}{2}(1) + b$

$b = -\frac{1}{2}$

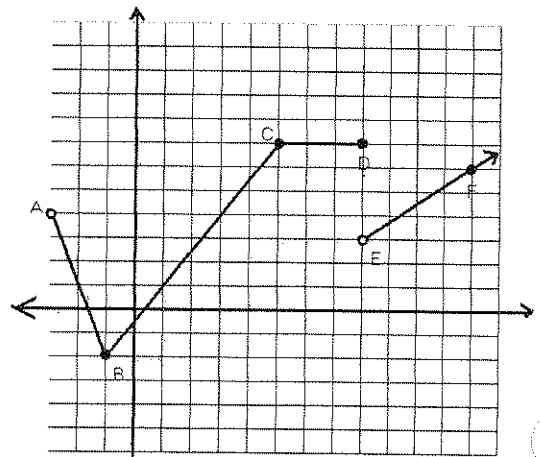
EF: $m = \frac{3}{4}$

$y = \frac{3}{4}x + b$

$3 = \frac{3}{4}(8) + b$

$3 = 6 + b$

$b = -3$



$$g(x) = \begin{cases} 3x + 1, & -3 < x \leq -1 \\ \frac{3}{2}x - \frac{1}{2}, & -1 < x \leq 5 \\ 7, & 5 < x \leq 8 \\ \frac{3}{4}x - 3, & x > 8 \end{cases}$$