Warm-Up Problems

Write the equation of a line that passes through (3, 1) and (5, 8)

$y = \frac{7}{2}x - \frac{19}{2}$

What is the parallel slope of the equation y = 5x + 2

What is the perpendicular slope of the equation y = 5x + 2

Jan 10-7:16 AM

Write the equation of a line that passes through (3, 1) and (5, 8)

$y = \frac{7}{2}x - \frac{19}{2}$

$\frac{8-1}{5-3} = \frac{7}{2}$

$(5, 8) - (3, 1) = 2, 7 = x, y$ → $\frac{7}{2}$

* ① slope

② pt. (x, y) $(3, 1)$

$x = 3$

$y = 1$

$y = mx + b$

$1 = \frac{7}{2}(3) + b$

$1 = \frac{21}{2} + b$

$-2\frac{1}{2} \quad -2\frac{1}{2}$

$1 - \frac{21}{2} = b$

$\frac{2}{2} - \frac{21}{2} = b$

$-\frac{19}{2} = b$

$y = \frac{7}{2}x - \frac{19}{2}$

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

$y - 1 = \frac{7}{2}(x - 3)$

$y - 1 = \frac{7}{2}x - \frac{21}{2}$

$+1 \qquad +1$

$y = \frac{7}{2}x - \frac{21}{2} + 1$

$y = \frac{7}{2}x - \frac{21}{2} + \frac{2}{2}$

$y = \frac{7}{2}x - \frac{19}{2}$

Warm-Up Problems

- Write the equation of a line that passes through (3, 1) and (5, 8)
- What is the parallel slope of the equation y = 5x + 2
- What is the perpendicular slope of the equation y = 5x + 2

Jan 10-7:16 AM

Warm-Up Problems

- Write the equation of a line that passes through (3, 1) and (5, 8)

$y = \frac{7}{2}x - \frac{19}{2}$ $y = \frac{7}{2}x - 9.5$

- What is the parallel slope of the equation y = 5x + 2

5 $y = 5x$

- What is the perpendicular slope of the equation y = 5x + 2

$-1/5$ $m = \frac{5}{1} \Rightarrow -1/5$

Jan 10-7:16 AM

☆ Write the equation of a line that passes through (3, 1) and (5, 8)

$y = \frac{7}{2}x - \frac{19}{2}$ $y = \frac{7}{2}x - 9.5$

① Slope $\frac{y_2 - y_1}{x_2 - x_1}$ $\frac{8-1}{5-1} = \frac{7}{2}$

② $(\overset{3}{x}, \overset{1}{y})$

$x = 3$

$y = 1$

$y = mx + b$

$1 = \frac{7}{2}(3) + b$

$1 = \frac{21}{2} + b$

$-\frac{21}{2} \quad -\frac{21}{2}$

$\frac{7}{2} - \frac{21}{2} = b$

$-\frac{19}{2} = b$

$y = \frac{7}{2}x - \frac{19}{2}$

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

$y - 1 = \frac{7}{2}(x - 3)$

$y - 1 = \frac{7}{2}x - \frac{21}{2}$

$+1 \qquad +1$

$y = \frac{7}{2}x - \frac{21}{2} + 1$

$y = \frac{7}{2}x - \frac{21}{2} + \frac{2}{2}$

$y = \frac{7}{2}x - \frac{19}{2}$

☆ Write the equation of a line that passes through (3, 1) and (5, 8)

9.5

☆ What is the parallel slope of the equation y = 5x + 2

① slope $\frac{y_2 - y_1}{x_2 - x_1} = \frac{8-1}{5-3} = \frac{7}{2}$

x	y
(5,	8)
−(3,	1)
2	7

$\frac{\Delta y}{\Delta x} = \frac{7}{2}$

② $(x, y) = (3, 1)$

$x = 3$

$y = 1$

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

$y - 1 = \frac{7}{2}(x - 3)$

$y - 1 = \frac{7}{2}x - \frac{21}{2}$

$+1 \quad +1$

$y = \frac{7}{2}x - \frac{21}{2} + 1$

$y = \frac{7}{2}x - \frac{21}{2} + \frac{2}{2}$

$y = \frac{7}{2}x - \frac{19}{2}$

$y = mx + b$

$1 = \frac{7}{2}(3) + b$

$1 = \frac{21}{2} + b$

$-\frac{21}{2} \quad -\frac{21}{2}$

$\frac{2}{2} - \frac{21}{2} = b$

$-\frac{19}{2} = b$

$y = \frac{7}{2}x - \frac{19}{2}$

Warm-Up Problems

Write the equation of a line that passes through (3, 1) and (5, 8)

What is the parallel slope of the equation y = 5x + 2

What is the perpendicular slope of the equation y = 5x + 2

Jan 10-7:16 AM

Name_____

Period_____

Worksheet – Piecewise Functions

Evaluate the following for $f(x)=\begin{cases}3x-5, & x>4\\ x^2, & x\le 4\end{cases}$:

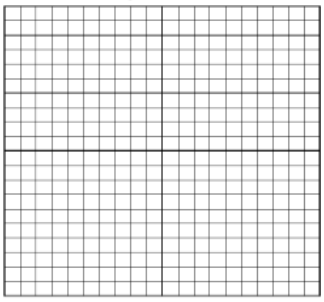
1. f(7)
2. f(4)
3. f(-3)

Evaluate the following for $f(x)=\begin{cases}-2|x+1|, & x\le 1\\ 3, & 1<x<3\\ 6-2x, & x\ge 3\end{cases}$:

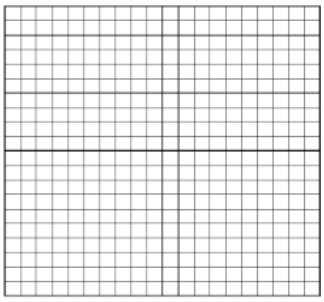
4. f(10)
5. f(2)
6. f(0)

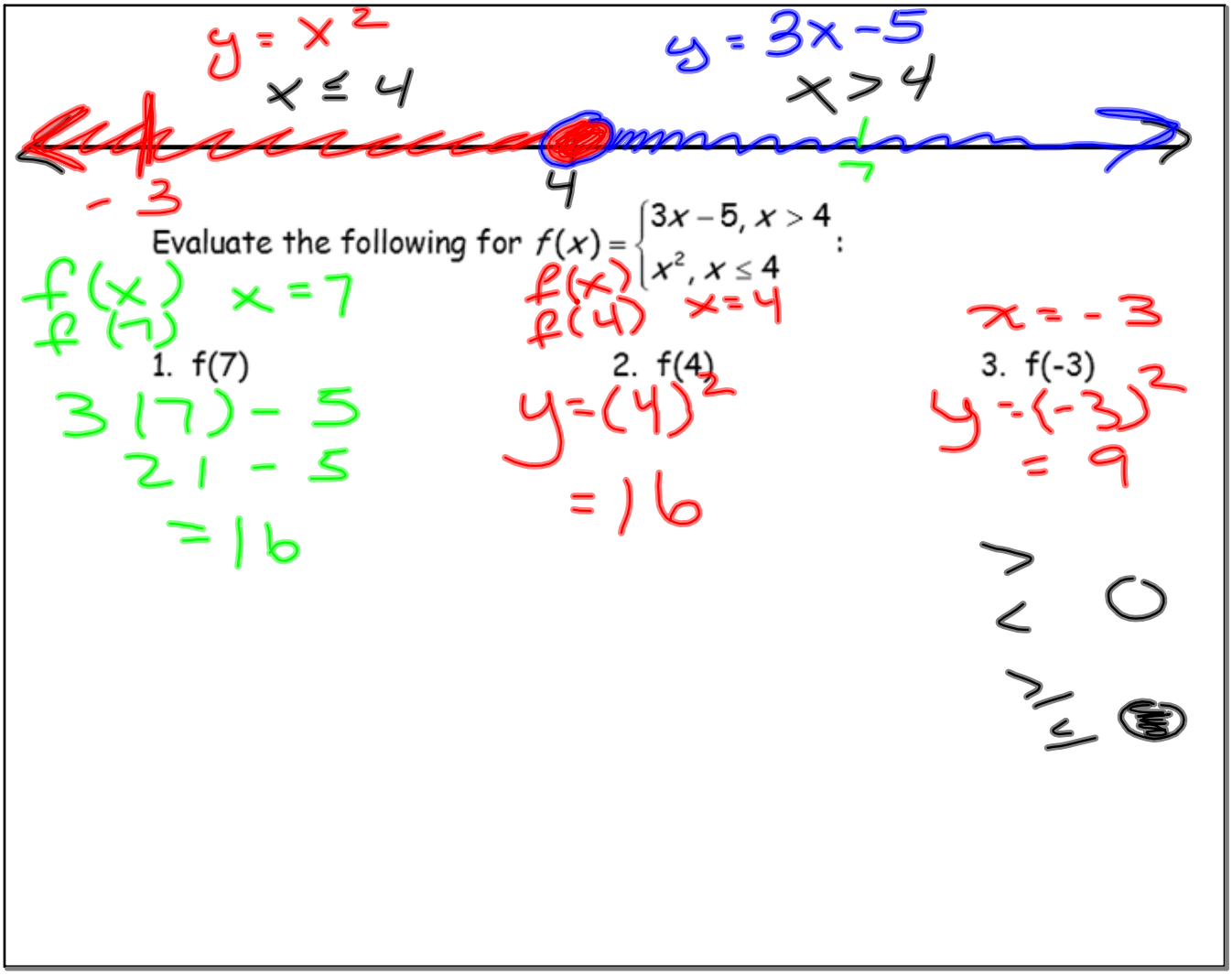
Graph the following piecewise functions.

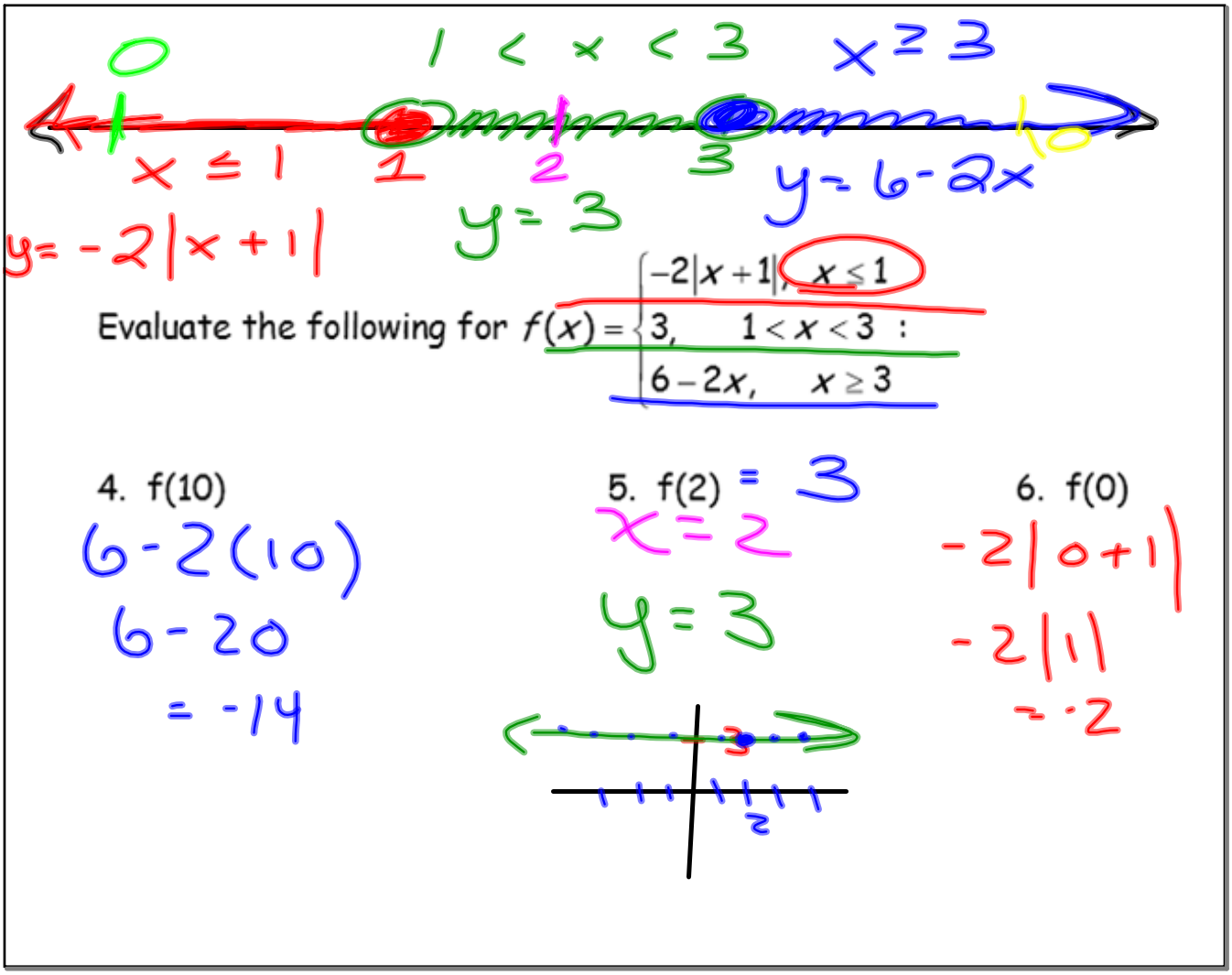
7. $f(x)=\begin{cases}-2, & x<0\\ 3, & x\ge 0\end{cases}$

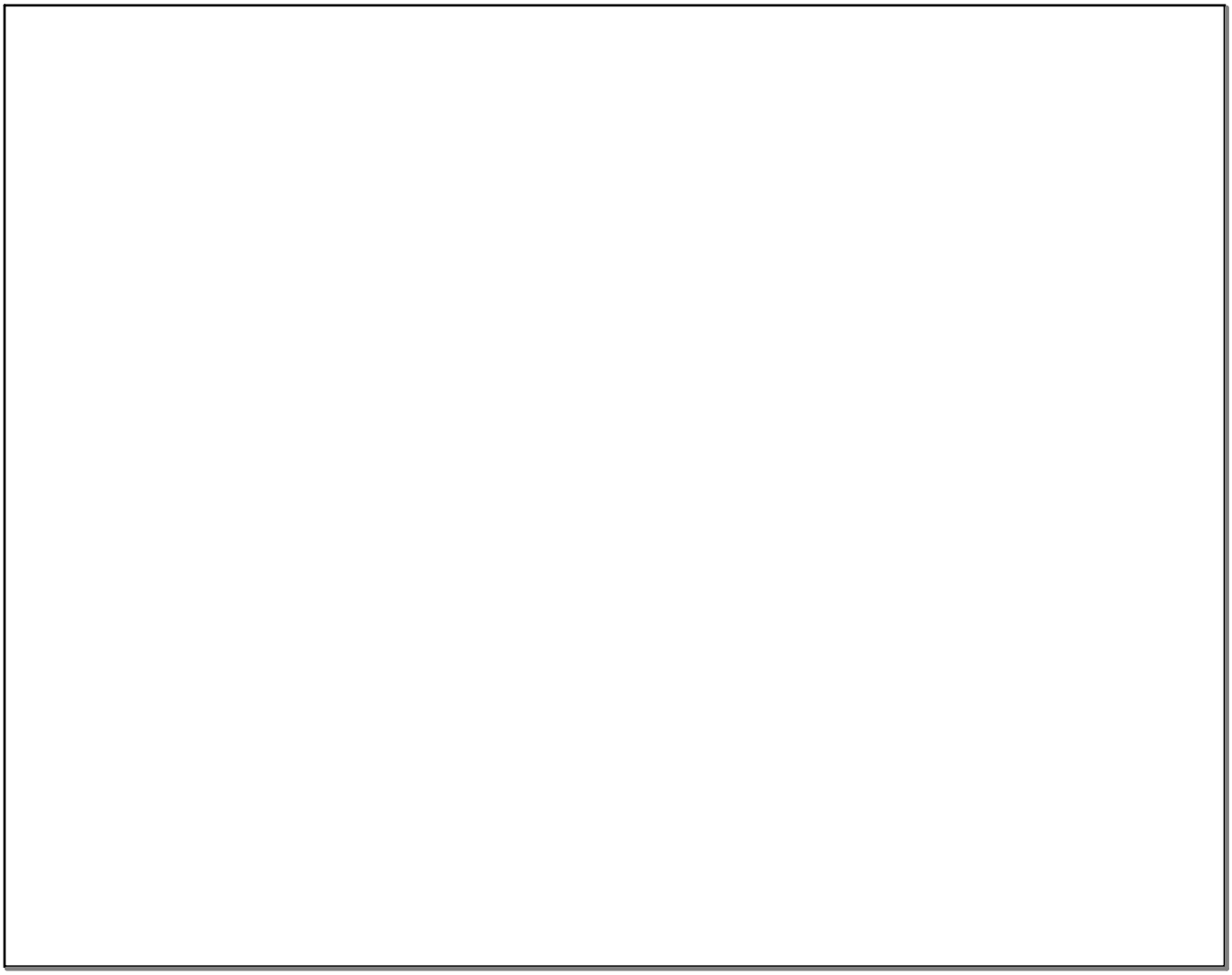


8. $g(x)=\begin{cases}-x+2, & x<2\\ x-2, & x\ge 2\end{cases}$




y = x²
x ≤ 4
y = 3x - 5
x > 4
-3
4
7
Evaluate the following for $f(x) = \begin{cases} 3x-5, & x > 4 \\ x^2, & x \le 4 \end{cases}$:
f(x)
f(7)
x = 7
1. f(7)
3(7) - 5
21 - 5
= 16
f(x)
f(4)
x = 4
2. f(4)
y = (4)²
= 16
x = -3
3. f(-3)
y = -(-3)²
= 9
> 0
< 0
≥ 1
≤ 1


0
1 < x < 3
x ≥ 3
x ≤ 1
1
2
3
y = 6 - 2x
y = -2|x + 1|
y = 3
Evaluate the following for $f(x) = \begin{cases} -2|x+1|, & x \le 1 \\ 3, & 1 < x < 3 \\ 6-2x, & x \ge 3 \end{cases}$:
4. f(10)
6 - 2(10)
6 - 20
= -14
5. f(2) = 3
x = 2
y = 3
6. f(0)
-2|0 + 1|
-2|1|
= -2



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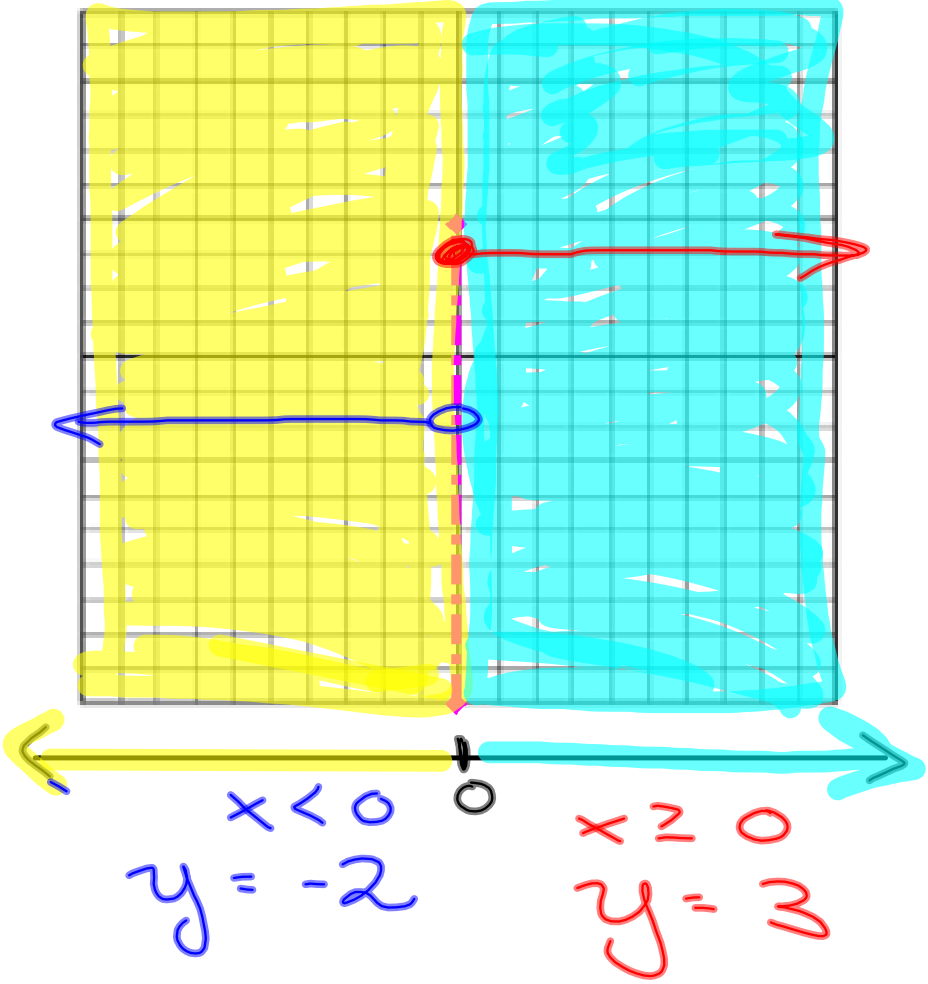
7. $f(x) = \begin{cases} -2, & x < 0 \\ 3, & x \geq 0 \end{cases}$

$y = -2$

$y = 3$



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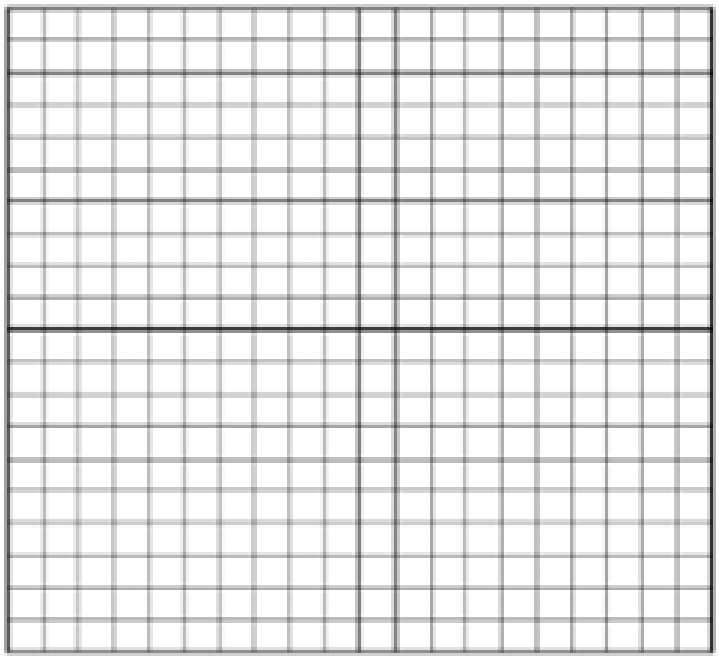
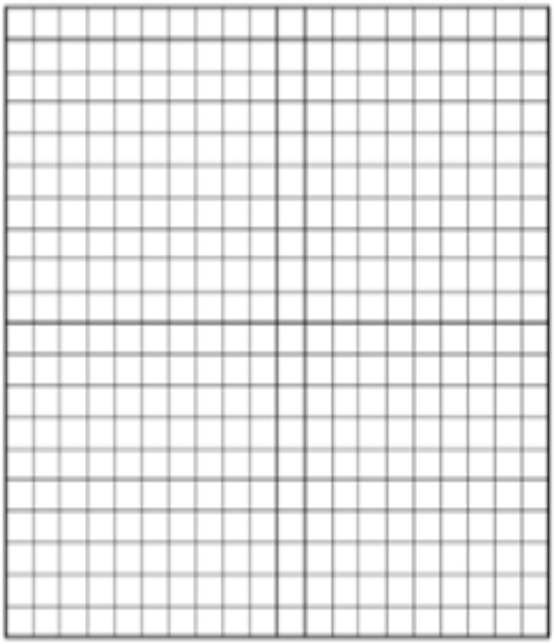
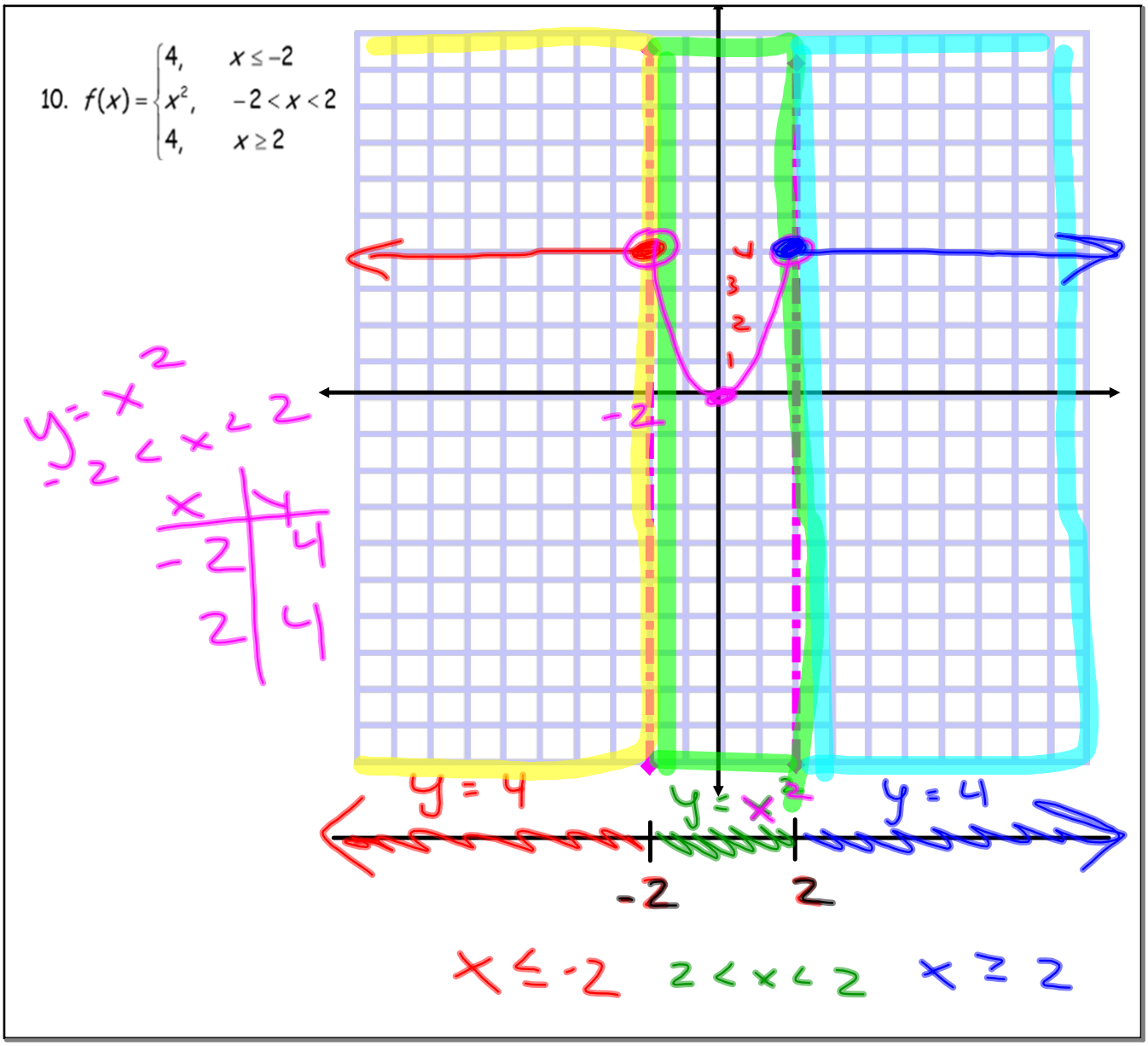
8. $g(x) = \begin{cases} -x+2, & x < 2 \\ x-2, & x \geq 2 \end{cases}$



Jan 10-7:14 AM

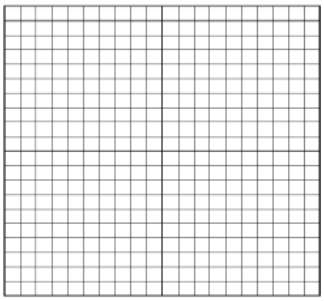
10. $f(x) = \begin{cases} 4, & x \le -2 \\ x^2, & -2 < x < 2 \\ 4, & x \ge 2 \end{cases}$



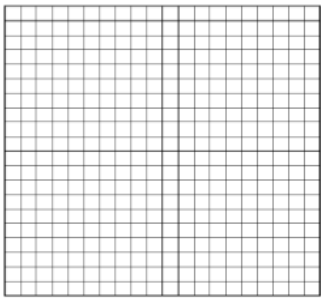

10. $f(x)=\begin{cases}4, & x\le -2\\ x^2, & -2<x<2\\ 4, & x\ge 2\end{cases}$
y = x²
-2 < x < 2
x | y
-2 | 4
2 | 4
y = 4
y = x²
y = 4
-2
2
x ≤ -2
-2 < x < 2
x ≥ 2

Jan 10-1:53 PM

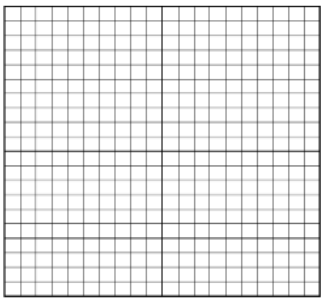
9. $h(x)=\begin{cases}-3x+2, & x\le 2\\ \frac{1}{2}x-4, & x>2\end{cases}$



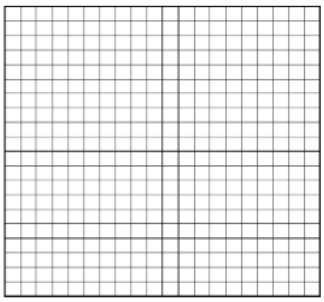
10. $f(x)=\begin{cases}4, & x\le -2\\ x^2, & -2<x<2\\ 4, & x\ge 2\end{cases}$



11. $g(x)=\begin{cases}3x+12, & x\le -3\\ |x|, & -3<x<3\\ -3x+12, & x\ge 3\end{cases}$



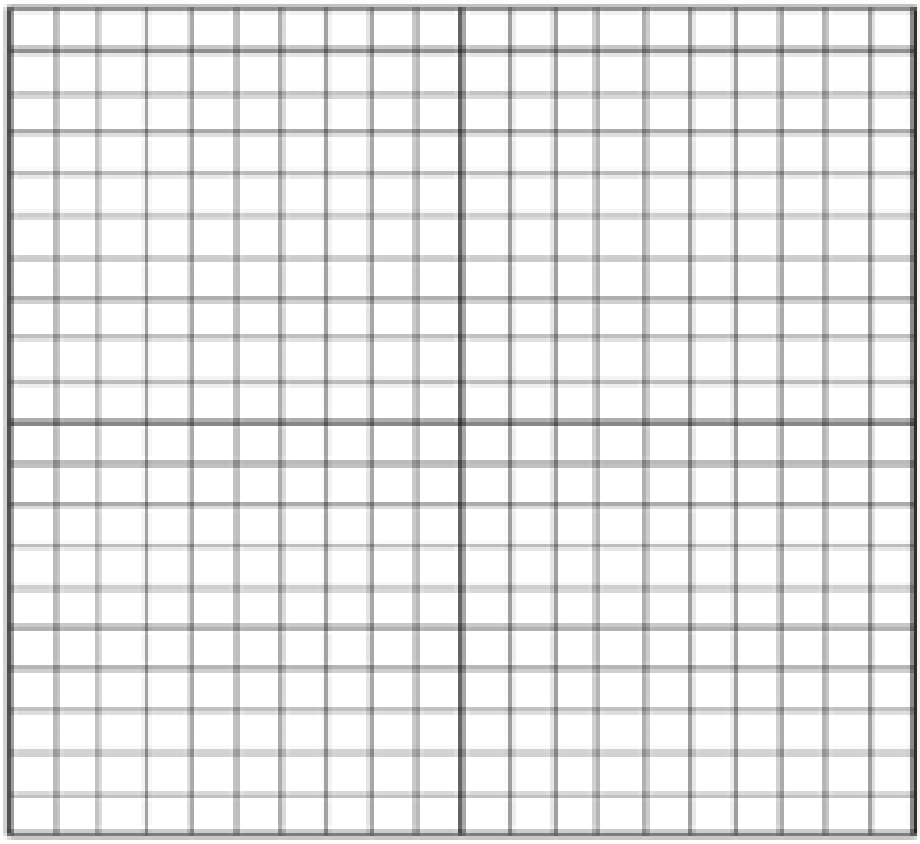
12. $h(x)=\begin{cases}x^2-4, & x<3\\ \frac{2}{3}x-5, & x\ge 3\end{cases}$



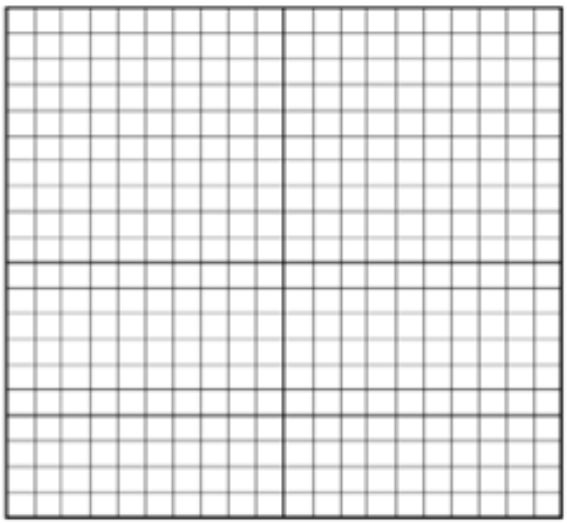
13. Which of the piecewise functions are continuous?

14. Which of the piecewise functions are discontinuous?

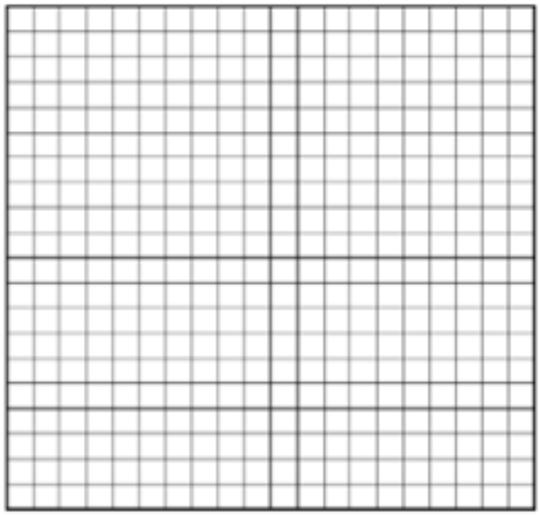
9. $h(x) = \begin{cases} -3x + 2, & x \leq 2 \\ \frac{1}{2}x - 4, & x > 2 \end{cases}$



11. $g(x) = \begin{cases} 3x + 12, & x \le -3 \\ |x|, & -3 < x < 3 \\ -3x + 12, & x \ge 3 \end{cases}$



12. $h(x) = \begin{cases} x^2 - 4, & x < 3 \\ \frac{2}{3}x - 5, & x \geq 3 \end{cases}$



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