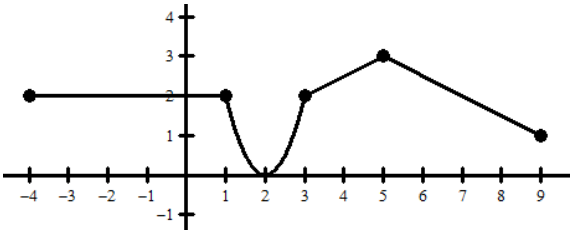
Math 3 Unit 2: Final Review **Name:**_____

Date:_____ **Per:**_____

1.



(a) State the open interval(s) on which *f* is increasing.
(b) State the open interval(s) on which *f* is decreasing.
(c) State the domain and range of *f*.
(d) State the coordinates of any relative minimums of *f*.
(e) State the coordinates of any relative maximums of *f*.
(f) Write a three pieced piecewise-defined function, *f*, that accurately represents the graph of *f* shown above.

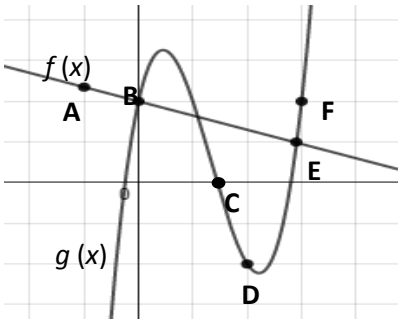
[2-5] Solve the following absolute value equations for *x* and graph the solution(s) on a number line. If there is no solution write '*none*' and explain why.

2. $|3x+2|+1=12$ 3. $-\left|\frac{x}{2}-5\right|=4$ 4. $\frac{2}{5}|3x+2|=20$ 5. $3\left|\frac{x}{4}-10\right|=0$

[6-9] Solve the following absolute value inequalities for *x* and graph the solution(s) on a number line. If there is no solution write '*none*' and explain why.

6. $|3x-10|\le 2$ 7. $-2|x+1|<-10$ 8. $3\left|\frac{2x}{3}-1\right|+4<-2$ 9. $2+2|x-5|\ge 0$

10. The graph of $y = f(x)$ and $y = g(x)$ is shown in the graph below.



a) List all of the labeled points that are solutions for $g(x) = 0$.

b) List all of the labeled points that are solutions for $g(x) = f(x)$.

c) List all of the labeled points that are solutions for $x = 0$ on the graph of $f(x)$.

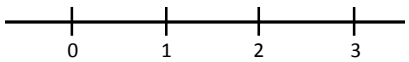
d) List all of the labeled points on $f(x)$ that are solution(s) for $g(x) < f(x)$

e) List all of the labeled points on $f(x)$ that are solution(s) for $g(x) > f(x)$.

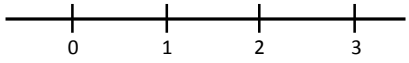
11. The table below shows several points on two continuous functions, $f(x)$ and $g(x)$.

x	0	1	2	3
$f(x)$	0	2	4	5
$g(x)$	–1	3	2	–2

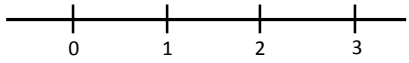
a) On the number line below, shade the interval(s) between the integers where the solution(s) to $f(x) = g(x)$ must exist. If no solutions must exist, explain why.



b) On the number line below, shade the interval(s) between the integers where the solution(s) to $g(x) = 0$ must exist. If no solutions must exist, explain why.

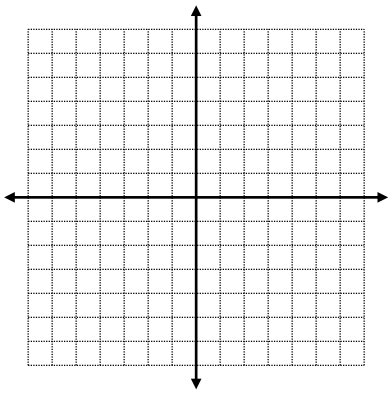


c) On the number line below, shade the interval(s) between the integers where the solution(s) to $f(x) = 3$ must exist. If no solutions must exist, explain why.

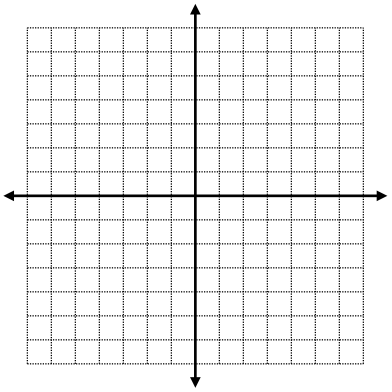


[12-14]Graph the system of inequalities on the graph provided.

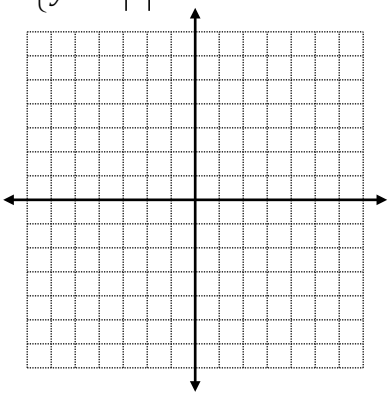
12. $\begin{cases} y \le 4 \\ y > x \end{cases}$



13. $\begin{cases} y > x^2 + 1 \\ y < 1 - x^2 \end{cases}$



14. $\begin{cases} y \le \frac{1}{3}|x+2| \\ y \ge -|x| \end{cases}$



[15-22] Solve the following quadratic equations for *x*. If there is no solution write '*none*' and explain why.

15. $(2x+1)(x-4)=0$

16. $3x^2 = 11x + 4$

17. $(x+1)(x+5)=3$

18. $x^2+4x-6=0$

19. $x^2+2x+5=0$

20. $(x+4)^2-5=6$

21. $2x^2-6x+5=4$

22. $x(x-3)=7$

23. $1 + 2(2x-3)^2 = 17$

24. $(x+2)^2 - 7 = 17$