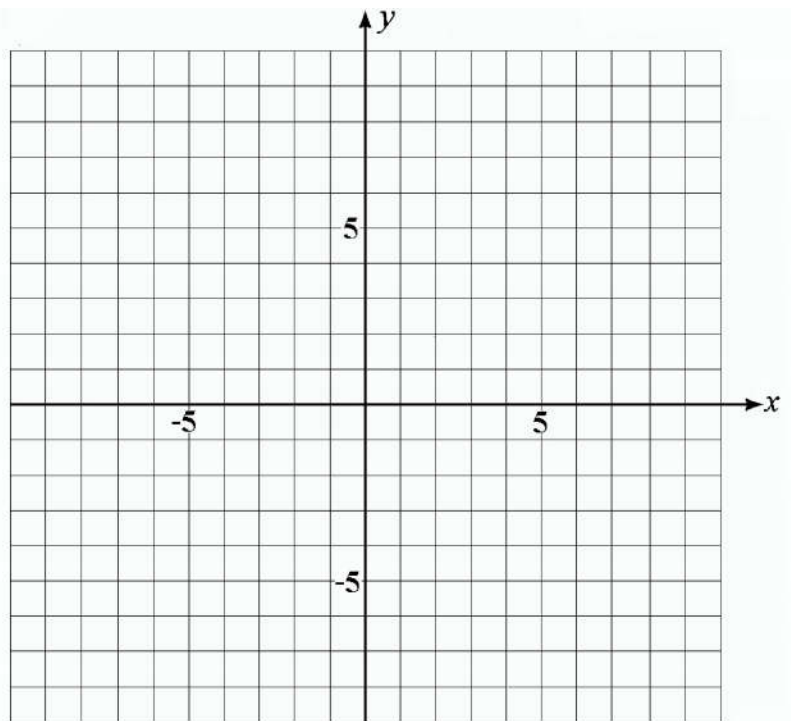


REVIEW OF BASIC FUNCTIONS

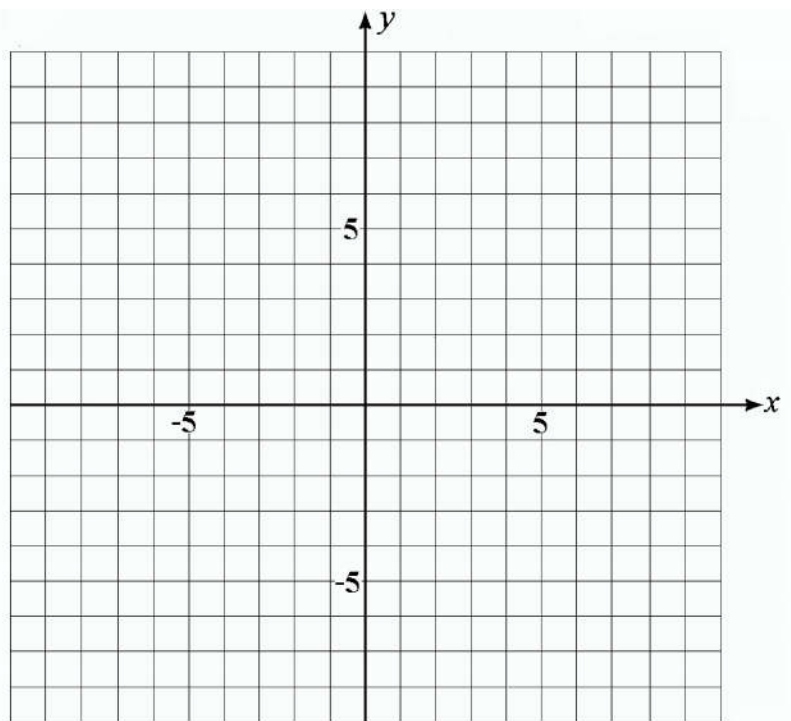
1. LINEAR FUNCTIONS: a) $y = 3x - 4$ b) $2x - 5y = 10$

	a	b
x-intercept		
y-intercept		
slope		



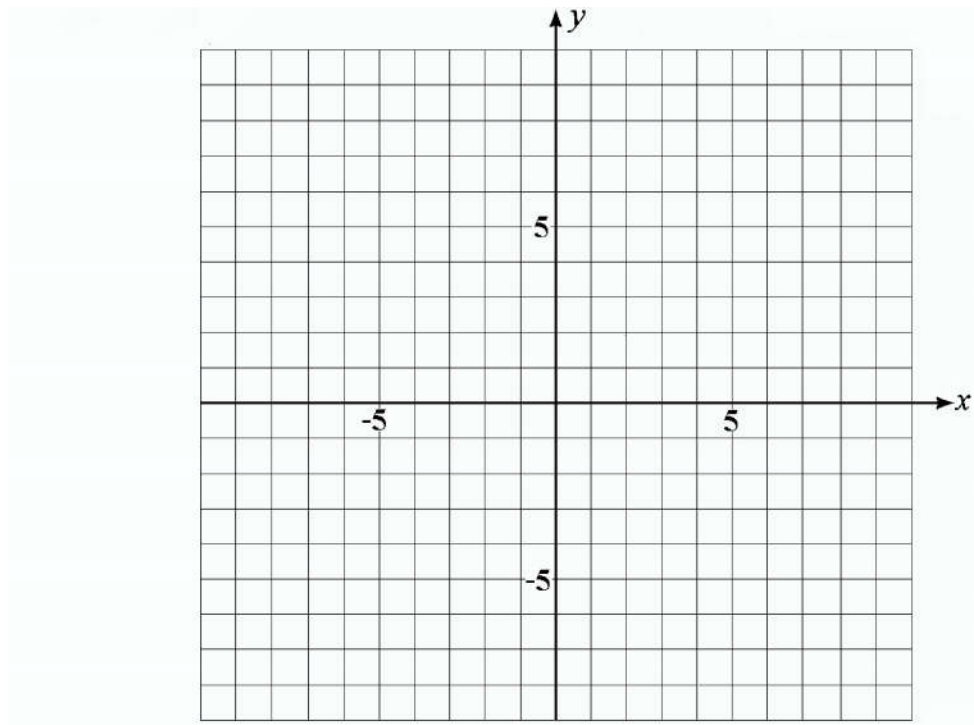
2. QUADRATIC FUNCTIONS: a) $y = \frac{1}{4}(x - 3)^2 + 2$ b) $y = 2x^2 - 8x + 3$

	a	b
x-intercept		
y-intercept		
Vertex		
Domain		
Range		



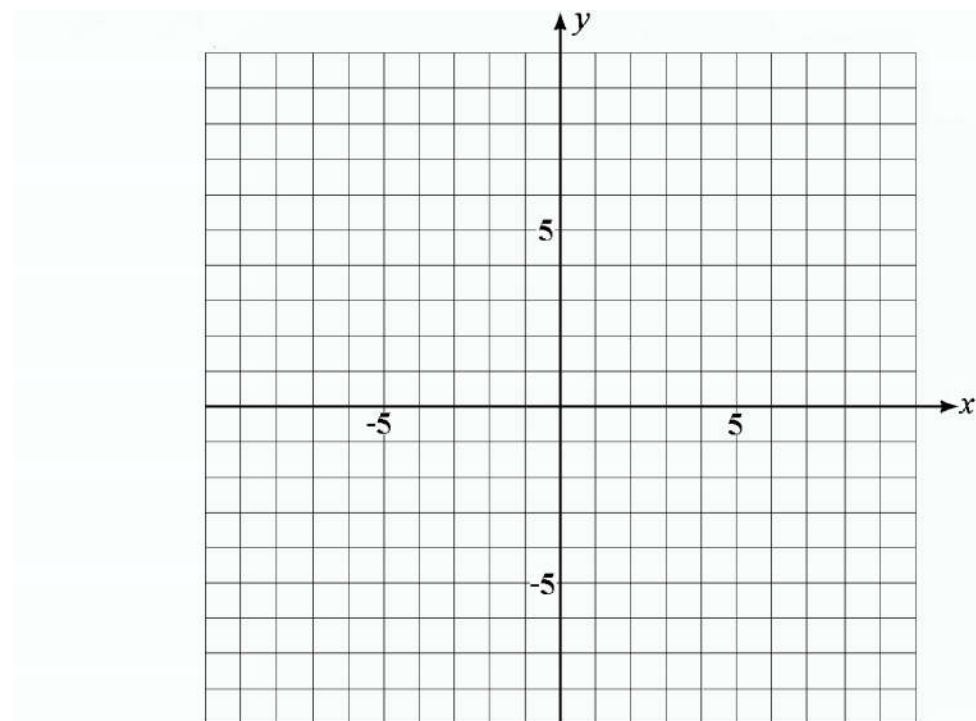
3. BASIC CUBIC FUNCTION: $y = x^3$

x	y
-3	
-2	
-1	
0	
1	
2	
3	



4. RECIPROCAL FUNCTION: $y = \frac{1}{x}$

x	y
-3	
-2	
-1	
-0.5	
0	
0.5	
1	
2	
3	



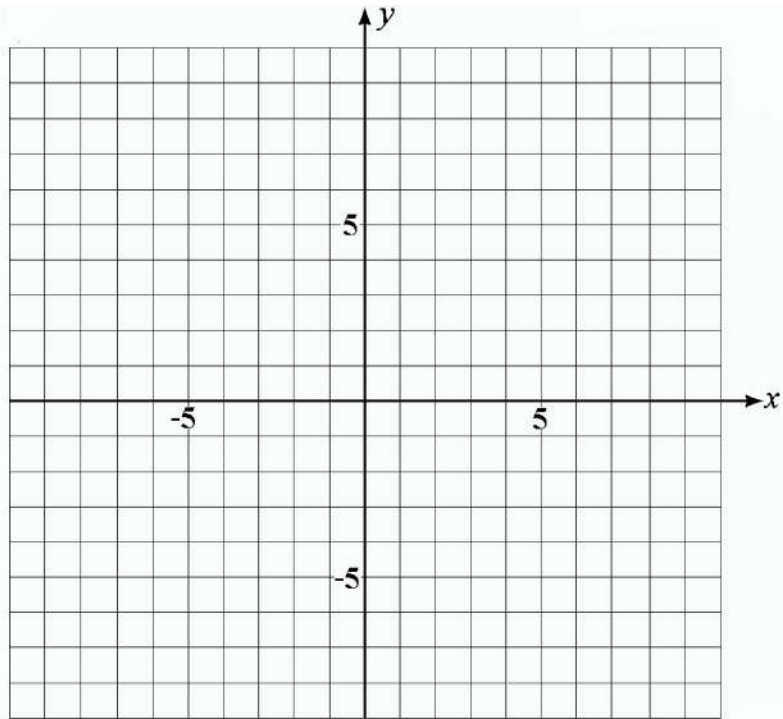
Domain:

Range:

Asymptotes:

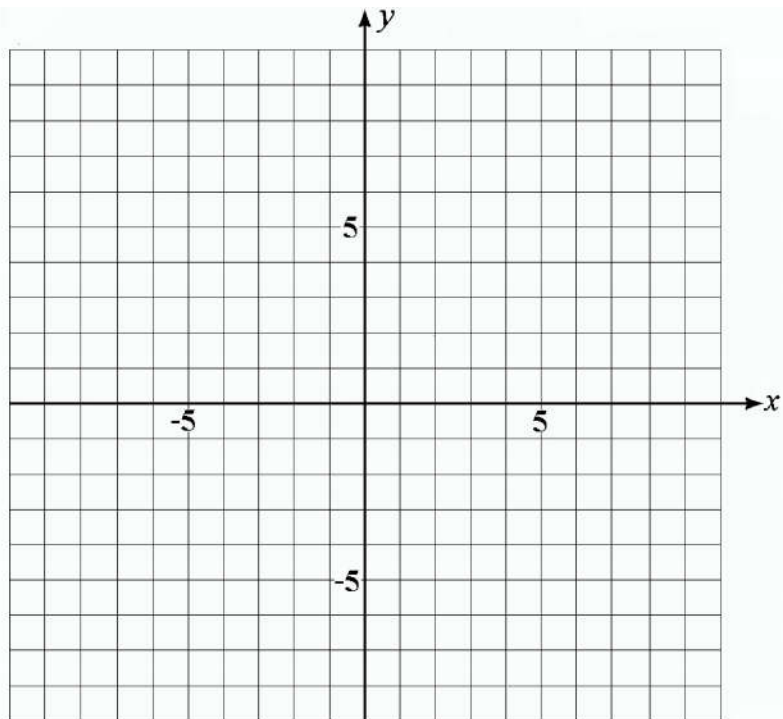
5. SQUARE ROOT FUNCTION: $y = \sqrt{x}$

x	y
0	
1	
4	
9	



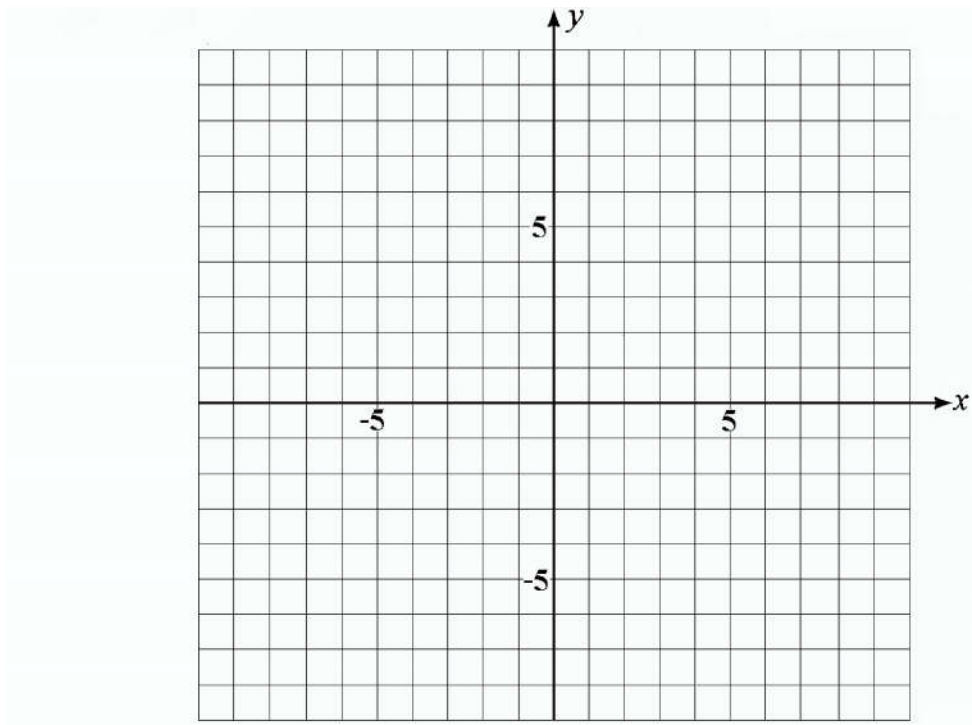
6. ABSOLUTE VALUE FUNCTION: $y = |x|$

x	y
-3	
-2	
-1	
0	
1	
2	
3	



7. EXPONENTIAL FUNCTION: $y = 2^x$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

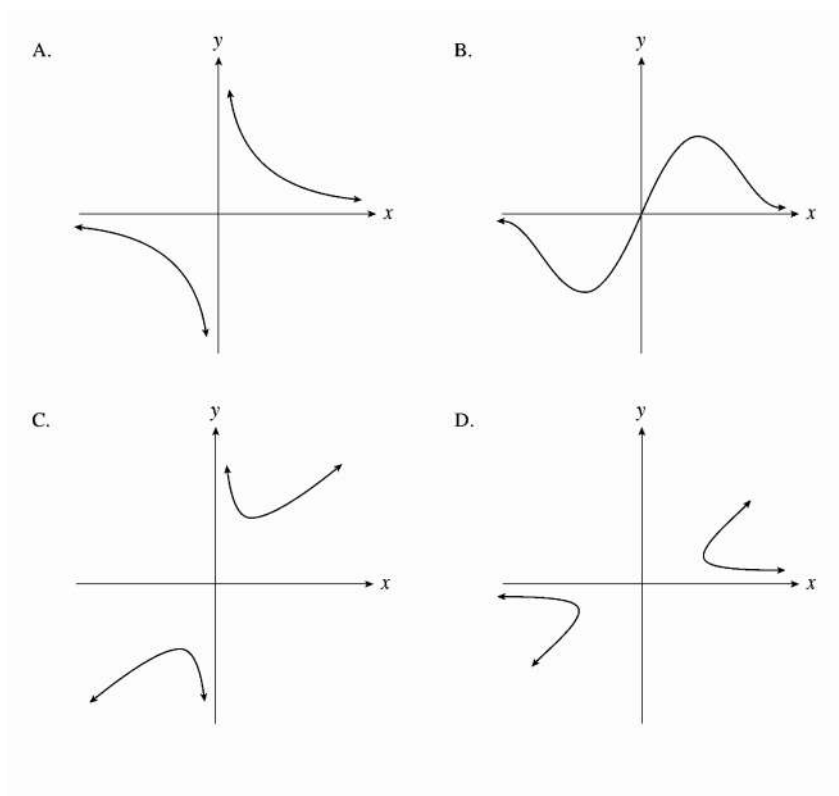


Domain:

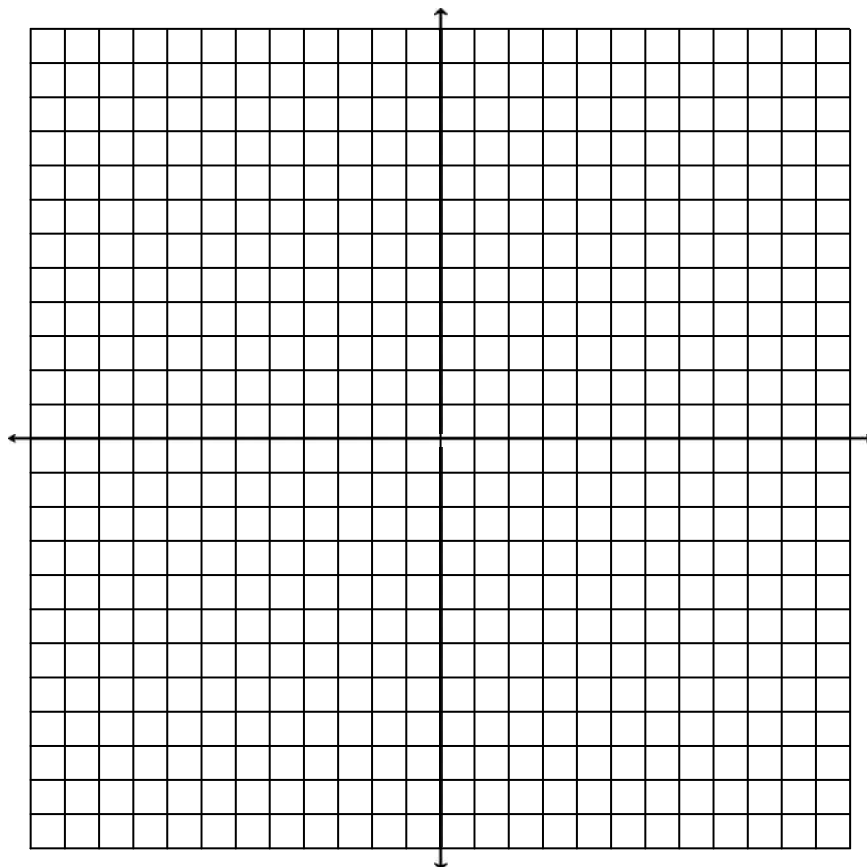
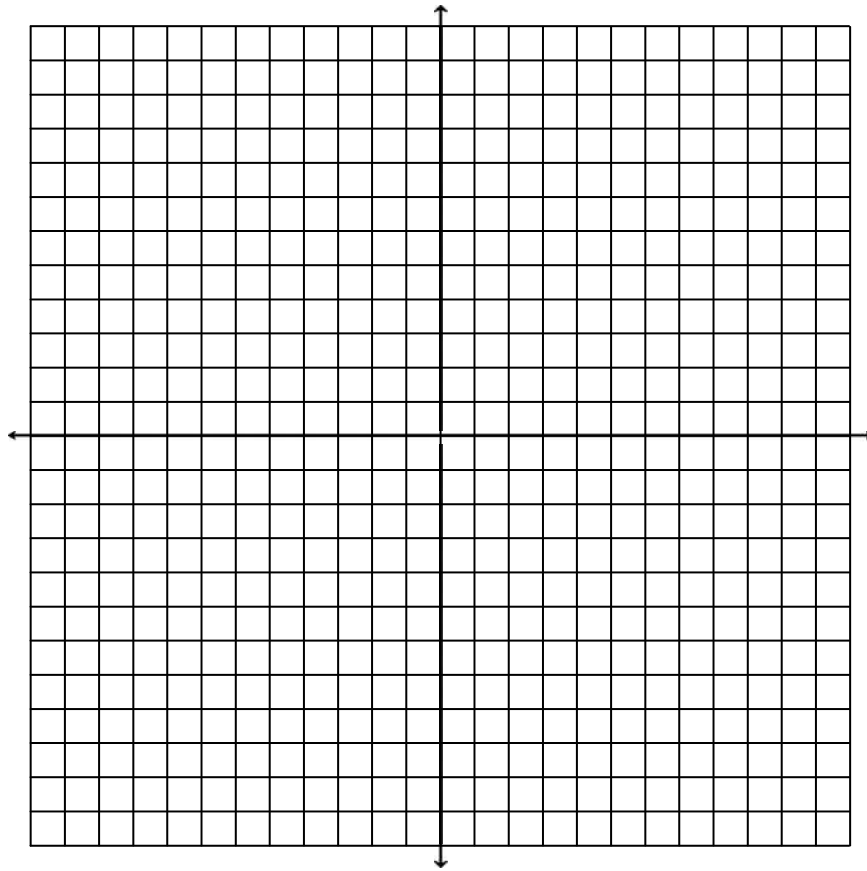
Range:

Asymptote:

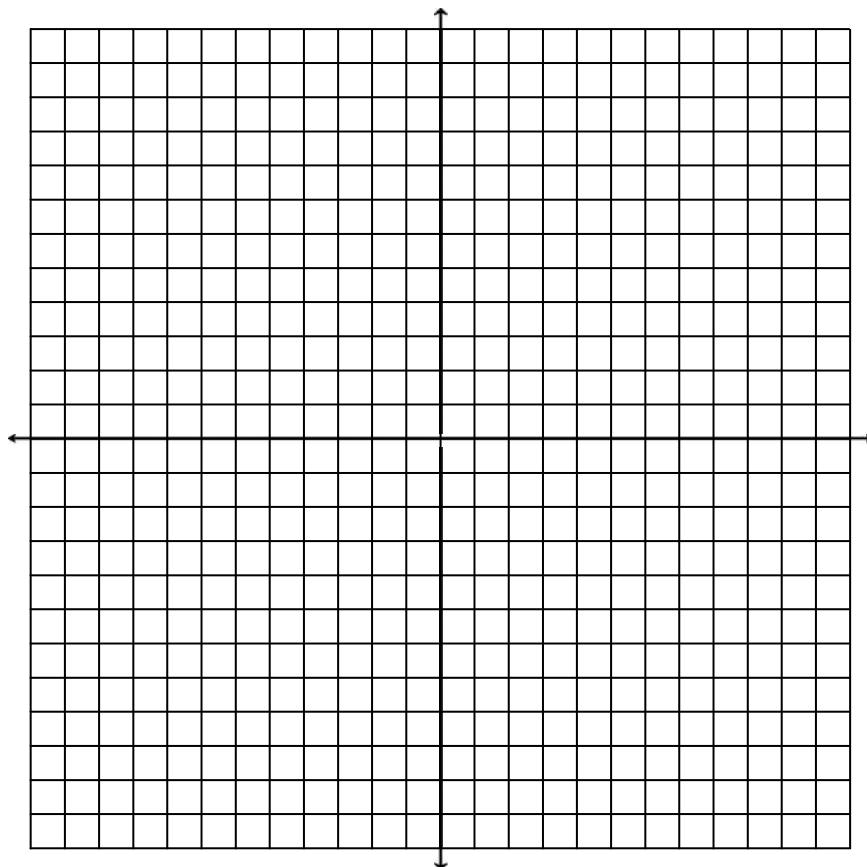
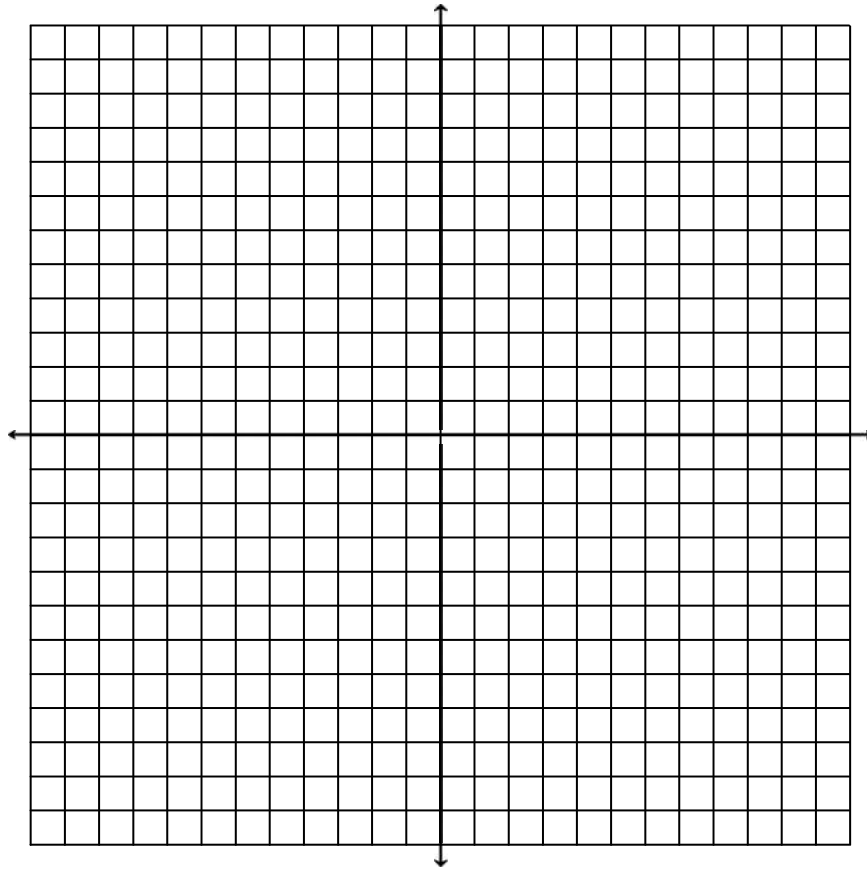
8. Given $f(x) = x$ and $g(x) = \frac{1}{x}$, which graph best represents $y = f(x) + g(x)$?



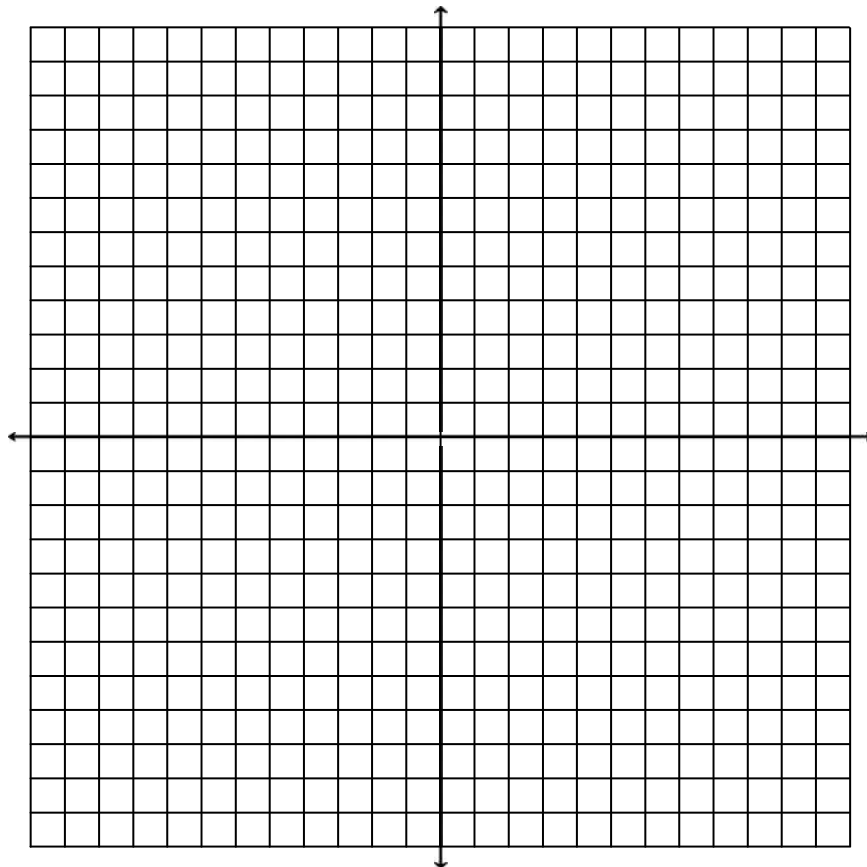
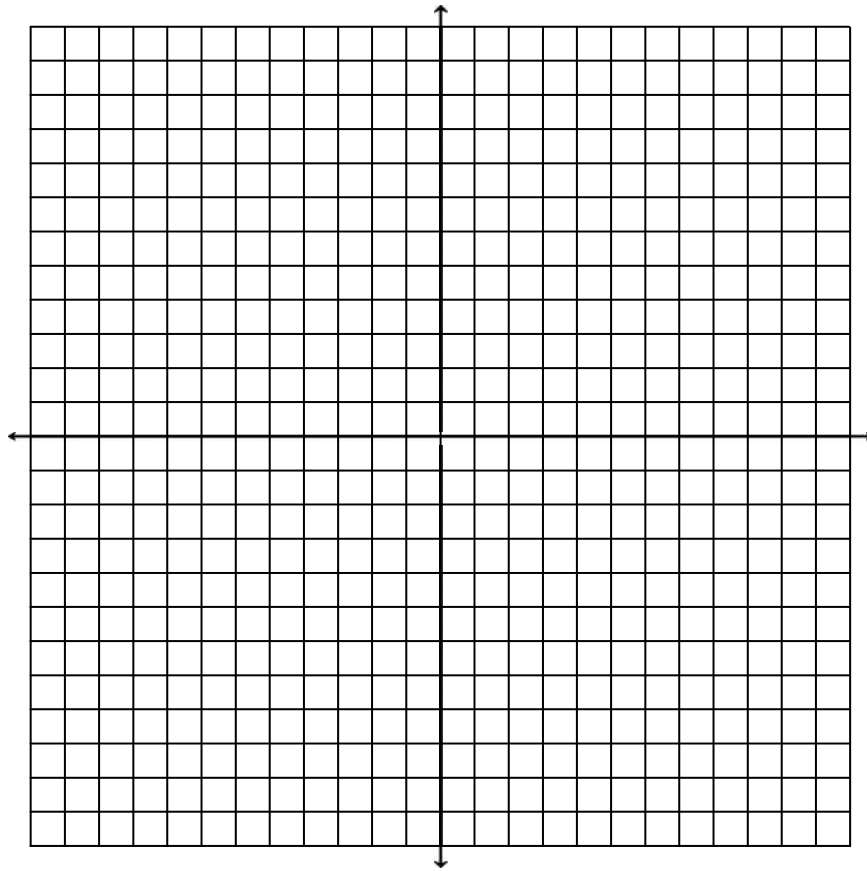
9. Given the functions $f(x) = |x|$ and $g(x) = \frac{1}{2}x - 4$, graphically combine these to obtain graphs of: a) $f(x) + g(x)$ b) $y = f(x)g(x)$ and c) $y = \frac{f(x)}{g(x)}$



10. Given the functions $f(x) = x - 3$ and $g(x) = x^3$, graphically combine these to obtain graphs of: a) $g(x) - f(x)$ and b) $f(x)g(x)$

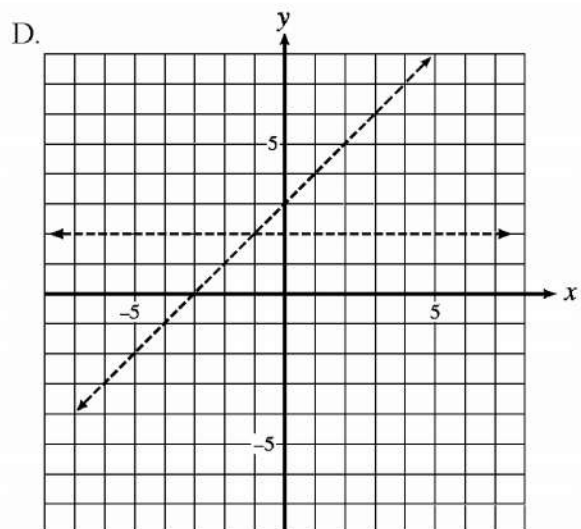
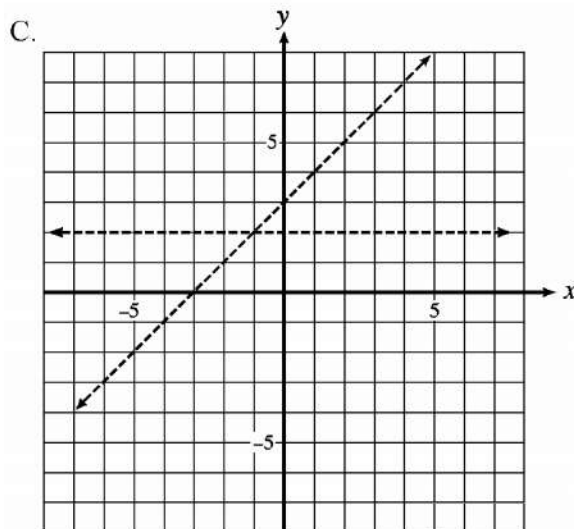
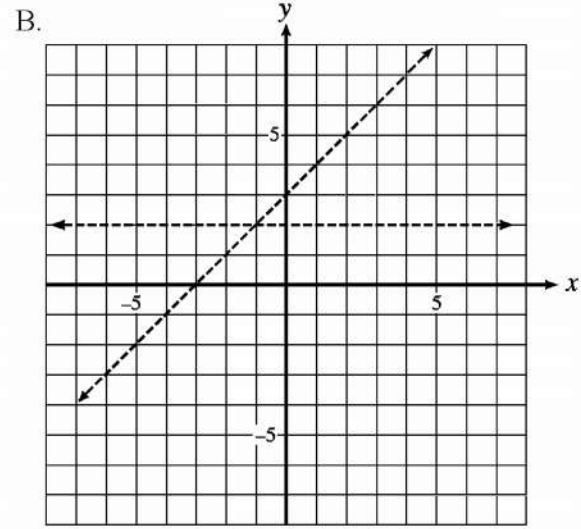
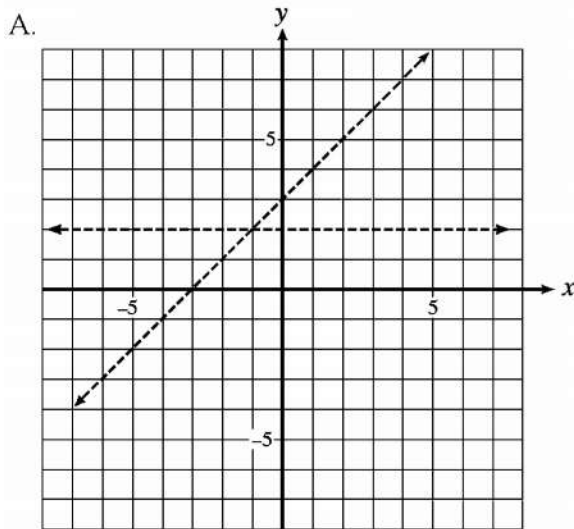
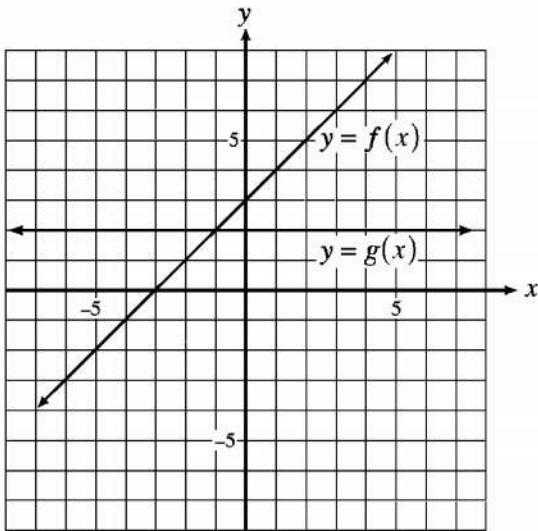


11. Given the functions $f(x) = 2^x$ and $g(x) = x^2$, graphically combine these to obtain graphs of: a) $f(x) - g(x)$ and b) $\frac{f(x)}{g(x)}$

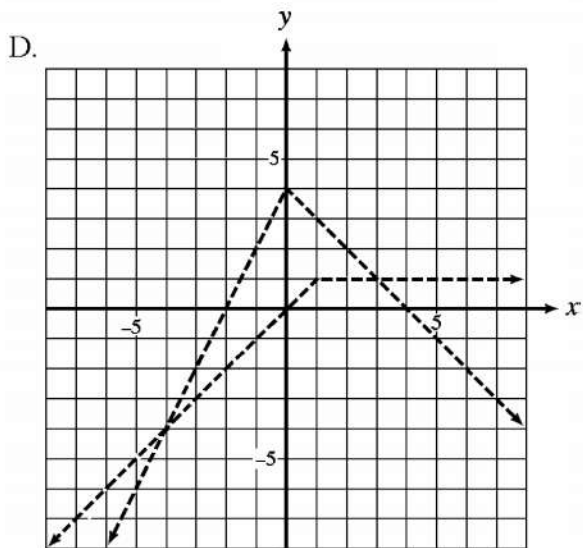
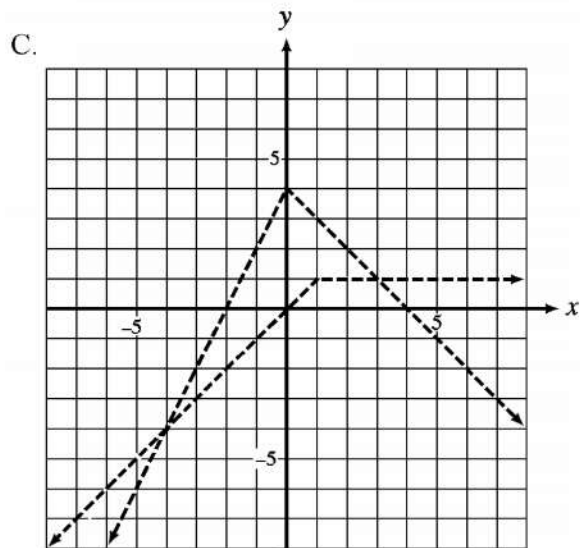
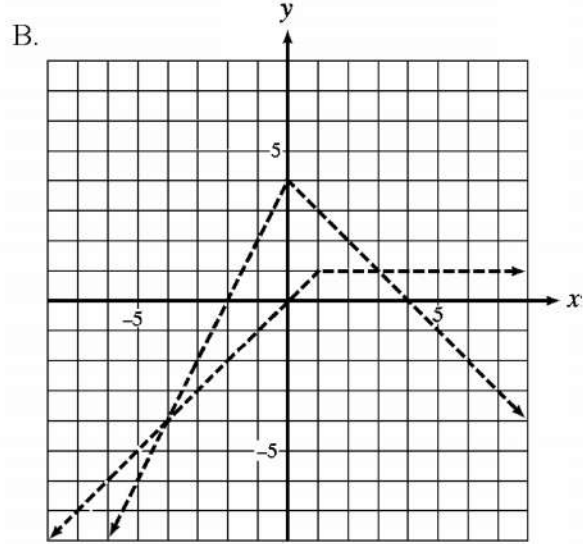
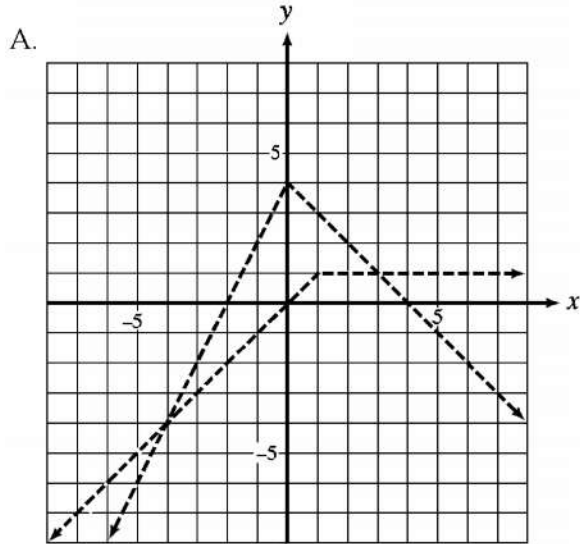
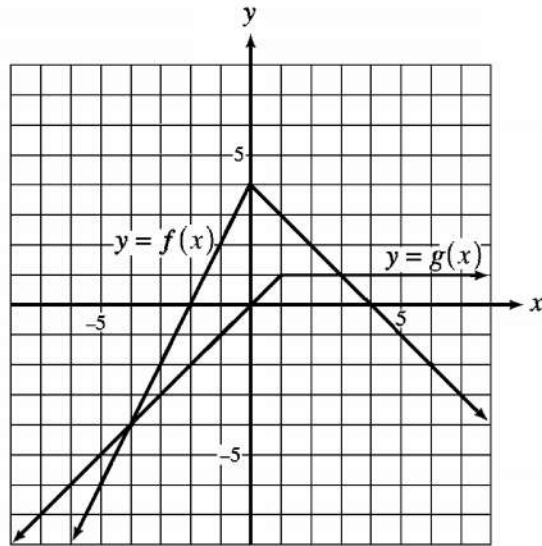


For the next 3 questions, graphs of $y = f(x)$ and $y = g(x)$ are given. Graphically combine these functions to obtain the graphs of: A. $y = f(x) + g(x)$ B. $y = f(x) - g(x)$ C. $y = f(x)g(x)$ D. $y = \frac{f(x)}{g(x)}$

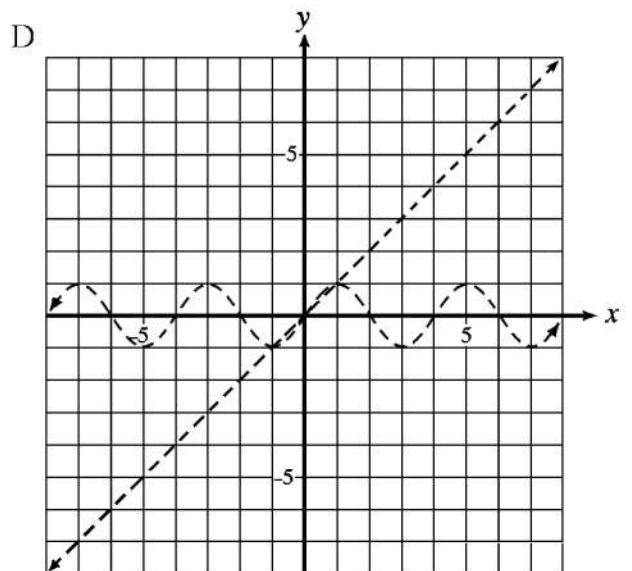
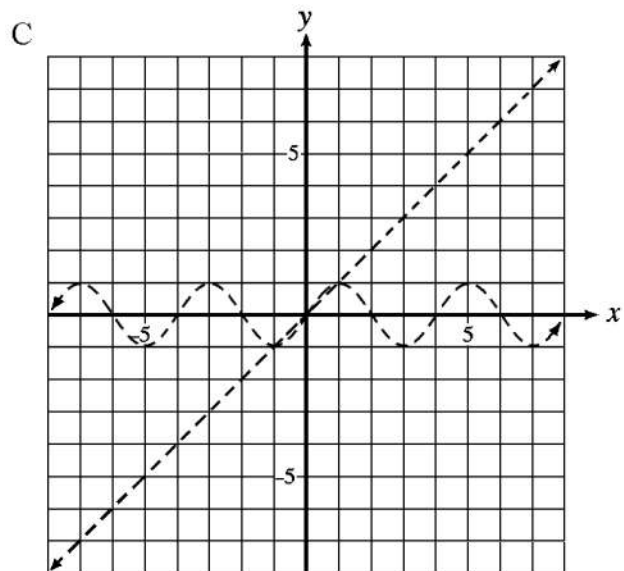
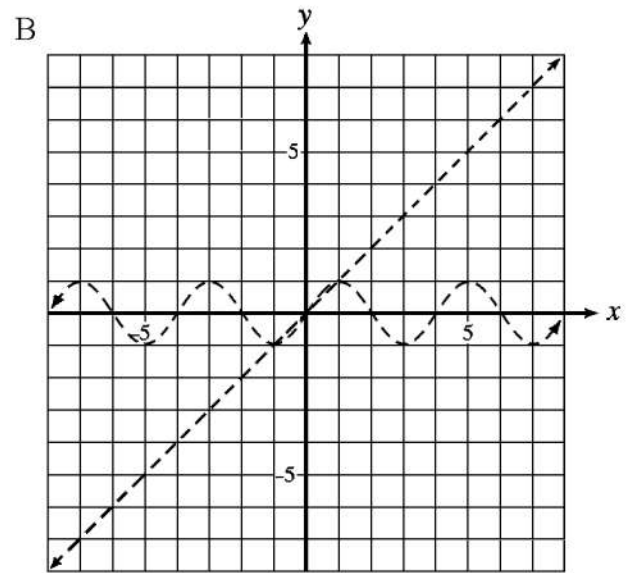
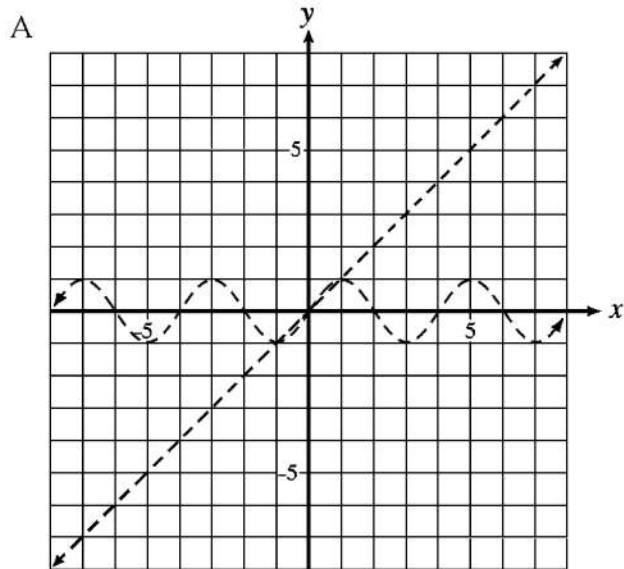
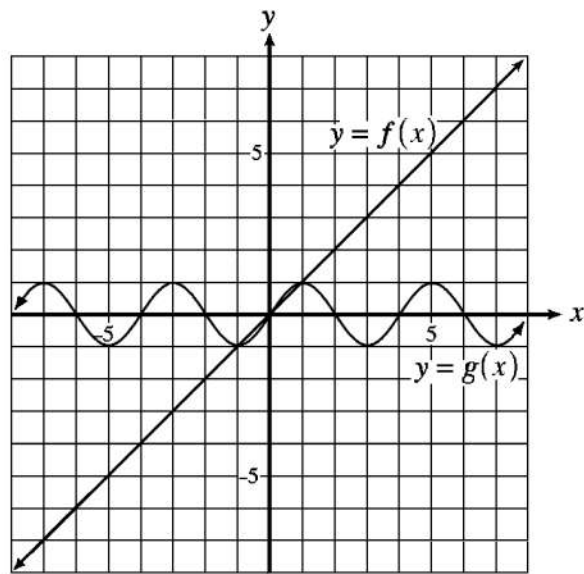
12.



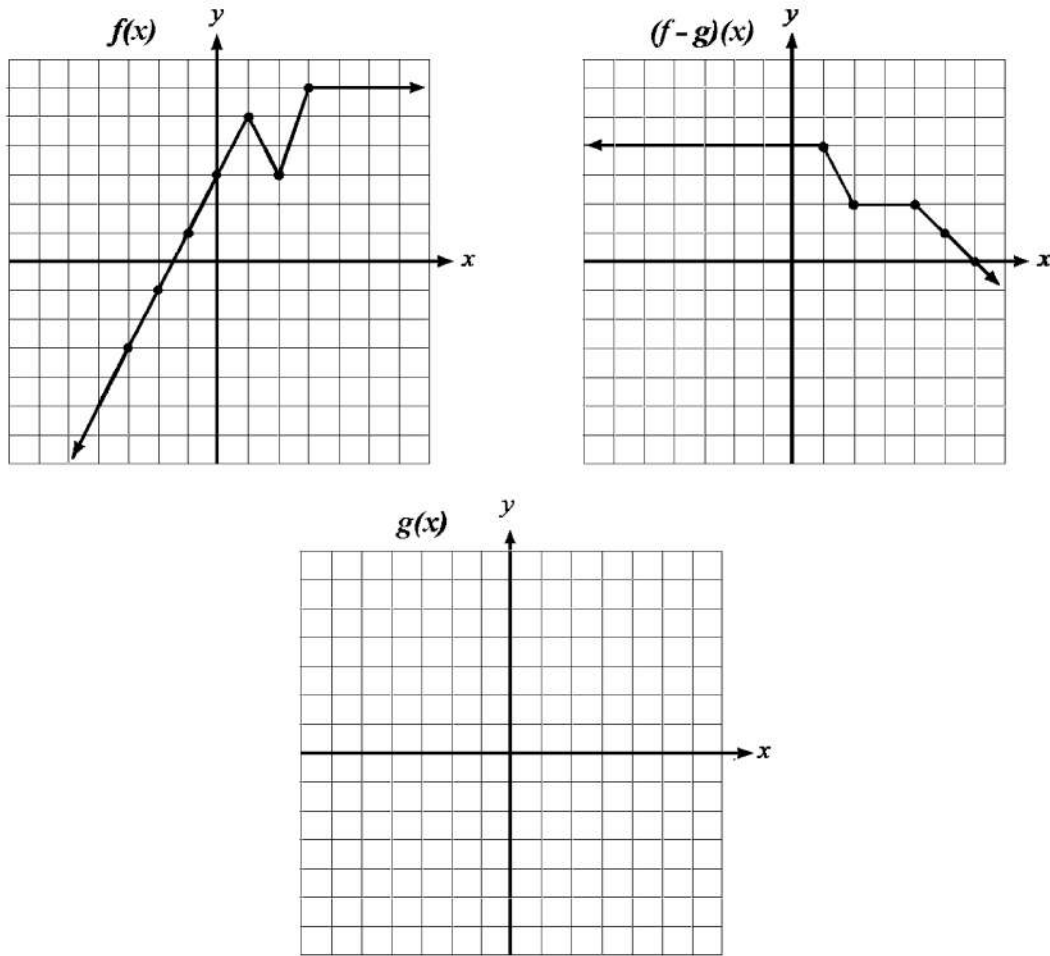
13.



14.



15. Given the graphs of $f(x)$ and $(f - g)(x)$, sketch the graph of $g(x)$.



16. If $f(x) = x^2 - 3x + 4$ and $g(x) = 5x + 2$, determine the equation for $f(x) - g(x)$.

- A. $x^2 - 8x + 2$
- B. $x^2 + 2x + 6$
- C. $x^2 - 8x + 6$
- D. $-5x^3 + 13x^2 - 14x - 8$

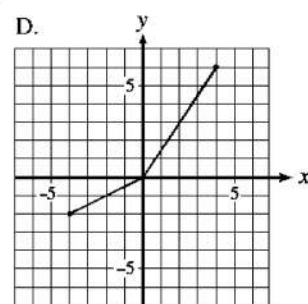
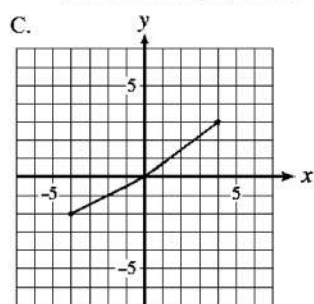
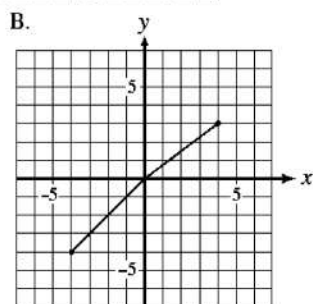
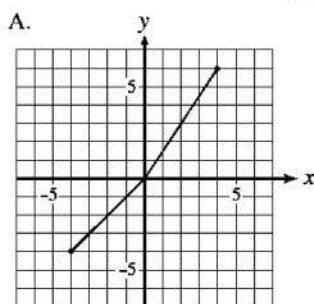
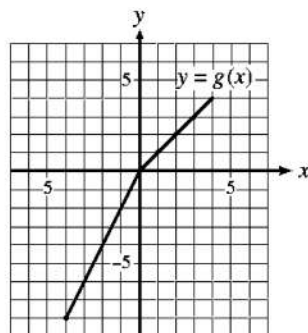
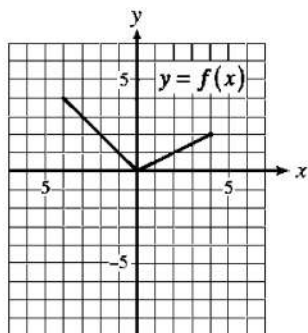
17. Given the functions $f(x) = x^2 - 3$ and $g(x) = -9 - x$, determine the equation for the combined function $y = f(x) + g(x)$.

- A. $y = x^2 - x + 6$
- B. $y = x^2 + 27x + 6$
- C. $y = x^2 - 27x - 12$
- D. $y = x^2 - x - 12$

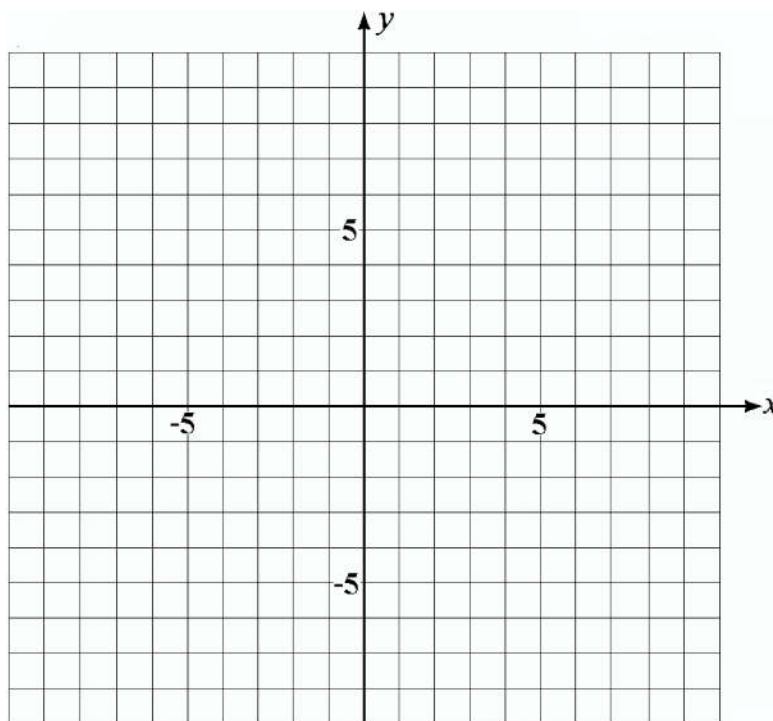
18. Given the functions $f(x) = x + 3$ and $g(x) = x^2 - 4$, determine the value of $(f + g)(-2)$.

- A. 0
- B. 1
- C. 3
- D. 5

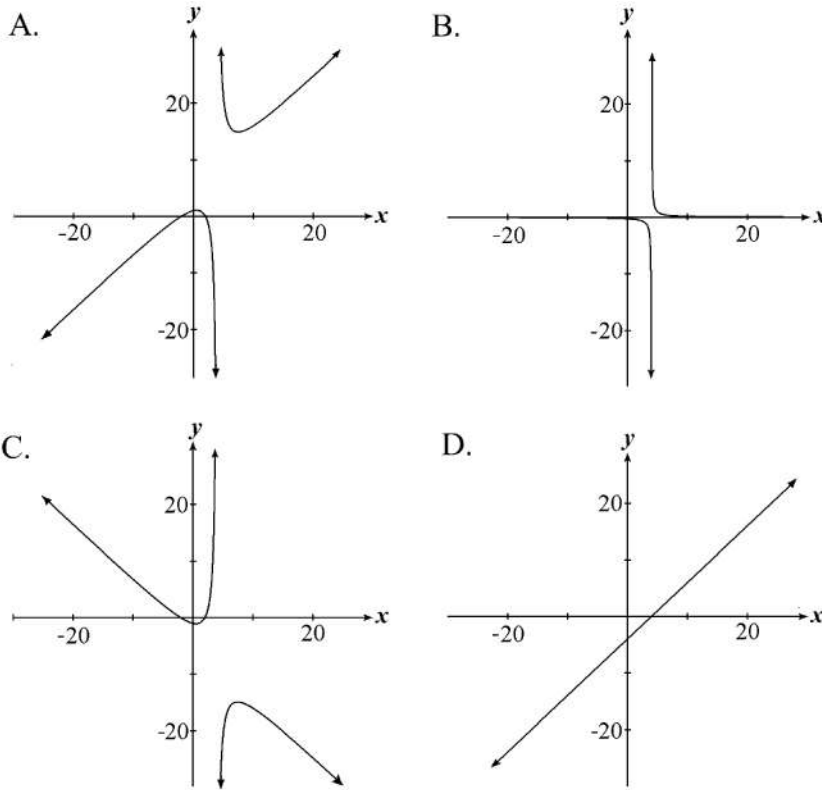
19. The graphs of $y = f(x)$ and $y = g(x)$ are graphed below. Which graph represents the graph of $y = f(x) + g(x)$?



20. Given the functions $f(x) = x^2 - 3$ and $g(x) = -2x + 3$, sketch the graph of the combined function $y = (f + g)(x)$ and state its domain and range.



21. Given the functions $f(x) = x^2 - 4$ and $g(x) = x - 4$, a graph of the combined function $h(x) = \frac{f(x)}{g(x)}$ most likely resembles



22. Given the functions $f(x) = x^3 - 81x$ and $g(x) = x + 9$, determine the simplified equation for the combined function $\frac{f(x)}{g(x)}$.

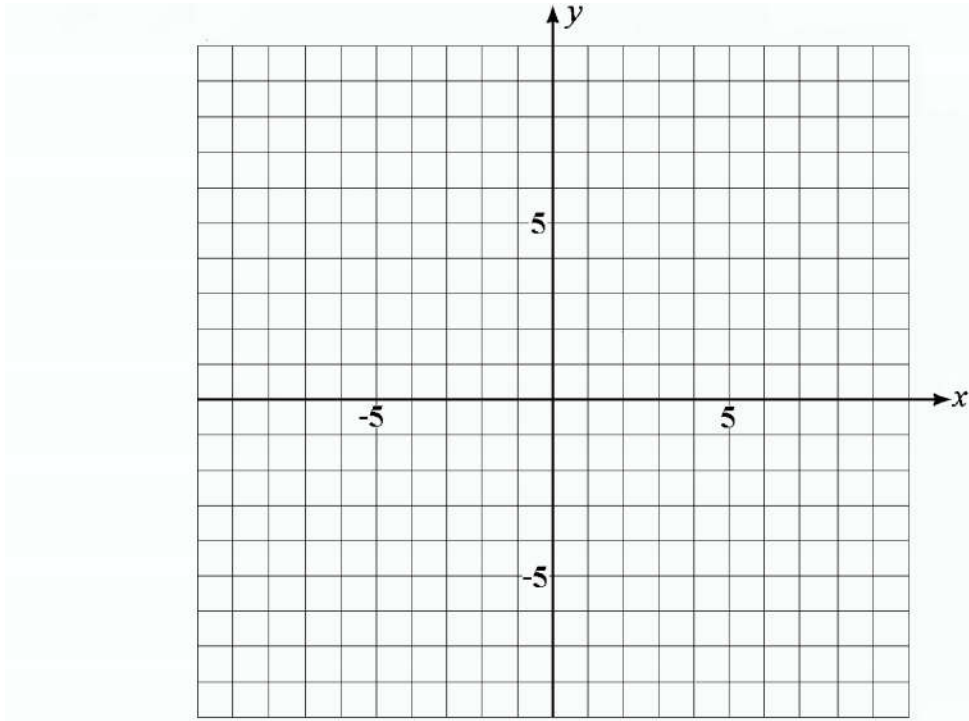
A. $x(x - 9)$, $x \neq -9$ B. $\frac{x}{x+9}$, $x \neq -9$ C. $\frac{x}{x-9}$, $x \neq -9, 9$ D. $x(x+9)$, $x \neq -9$

23. Given $f(x) = x^2 - 5$, $g(x) = x - 2$, and $h(x) = \frac{2x^2 - 6x + 5}{x - 2}$, determine $j(x) = \frac{f(x)}{g(x)} + h(x)$, and state the domain and range of $j(x)$.

24. If $f(x) = x^3$ and $g(x) = 2x - 3$, determine the value of $\left(\frac{f}{g}\right)(-1)$.

25. If $f(x) = \frac{1}{x-2}$ and $g(x) = x - 2$, determine the domain of $f(x) \cdot g(x)$.

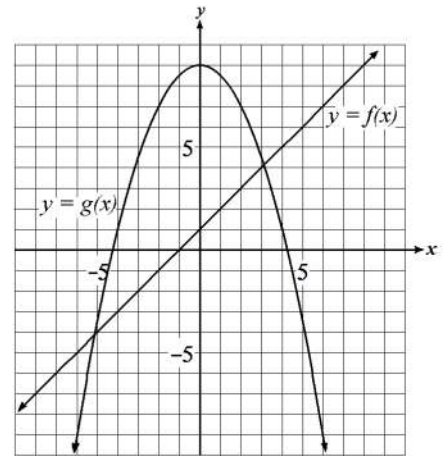
26. Given the functions $f(x) = x^2 - 1$ and $g(x) = x + 1$, sketch the graph of $y = \frac{g(x)}{f(x)}$.



27. Given that $h(x) = 2x^2 + 5x - 3$ and that $h(x) = f(x)g(x)$, determine possible equations for $f(x)$ and $g(x)$.

28. Consider the functions $y = f(x)$ and $y = g(x)$, as shown. Determine the values of $h(-2)$, for

- a) $h(x) = (f + g)(x)$
- b) $h(x) = (f - g)(x)$
- c) $h(x) = (fg)(x)$
- d) $h(x) = \left(\frac{f}{g}\right)(x)$
- e) $h(x) = f(g(x))$



29. A polynomial function f has zeros at 1, -1 , and 2. Given the function $g(x) = \frac{x+1}{x-2}$, determine the domain of the function $h(x) = \frac{f(x)}{g(x)}$.

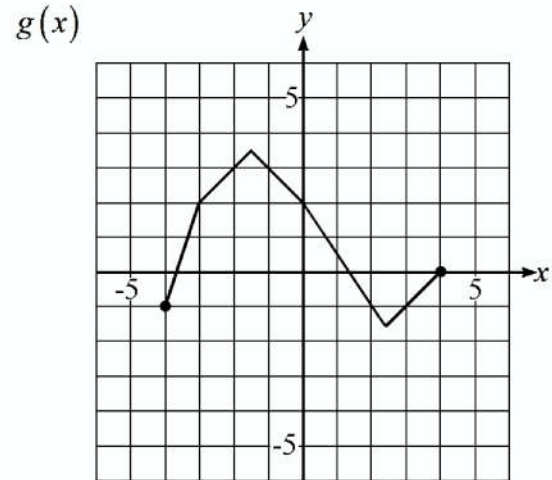
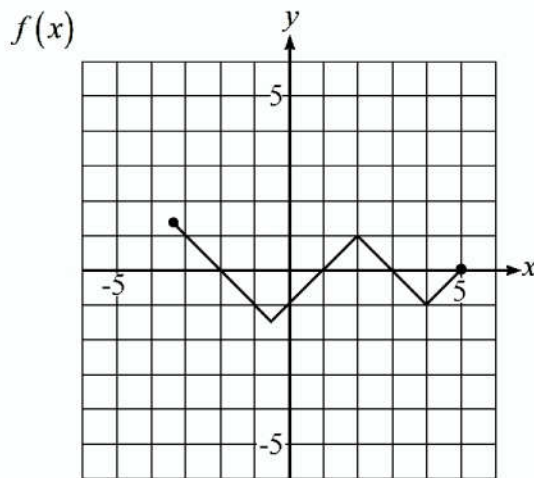
- A. all real numbers
- B. all real numbers, $x \neq 2$
- C. all real numbers, $x \neq -1$
- D. all real numbers, $x \neq -1$, $x \neq 2$

30. Given $f(x) = x^2 - 2x - 3$ and $g(x) = x + 1$, write the equations of:

- a) $y = f(g(x))$
- b) $y = g(f(x))$
- c) $y = f(f(x))$
- d) $y = g(g(x))$

31. Given $f(x) = \sqrt{x-2}$ and $g(x) = 3x$, write the equation for $h(x) = f(g(x))$ and state its domain.
32. Given $f(x) = x - 1$ and $g(x) = x^2$, write the equation of $y = f(g(x))$.
33. Given that $f(x) = (1, 3), (2, 5), (3, 4), (4, 2)$, determine $f(f(3))$.
34. Given the following two functions, $f(x) = \sqrt{x-1}$ and $g(x) = x^2 + 1$, evaluate $g(f(3))$.
35. Given $f(x) = x^2 - 1$ and $g(x) = \sqrt{x+1}$, determine a simplified equation for $y = f(g(x))$ and state its domain.
36. Given $f(x) = x^2 - 2x - 3$ and $g(x) = x + 1$,
- Write the equation of $y = f(g(x))$.
 - Write the equation of $y = g(f(x))$.

37. Given the following graphs:



- Determine the value of $[f \cdot g](0)$
 - Determine the value of $g(f(4))$
 - Determine a value for k where $f(k) = 1$
38. Given $f(x) = x + 2$ and $g(x) = x^2 + 3x - 1$, determine the value of $f(g(3))$.
- A. 16 B. 17 C. 19 D. 39
39. Given $f(x) = 7 \log_2 x$ and $g(x) = 5x + 6$, determine the value of $f(g(2))$.
40. Using the function $f(x) = \frac{x^2 + 4}{x - 2}$, determine the value of $f(f(4))$.
41. Given $f(x) = \sqrt{x - 1}$, $g(x) = x^2 + 3$, and $h(x) = 2x - 5$, determine $k(x) = h(f(g(x)))$, including restrictions on the domain.

42. Given the functions $f(x) = 7 - x$ and $g(x) = 2x + 1$, determine the equation $y = h(x)$ for each question below and state the domain and range.

a) $h(x) = f(x) - g(x)$

b) $h(x) = f(x)g(x)$

c) $h(x) = \frac{g}{f}(x)$

d) $h(x) = g(f(x))$

43. If $h(g(x)) = \sqrt{x^3 - 5}$, which of the following gives possible equations for $g(x)$ and $h(x)$?

A. $g(x) = x^3, h(x) = x$

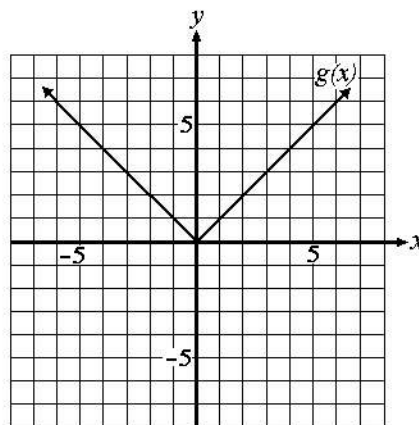
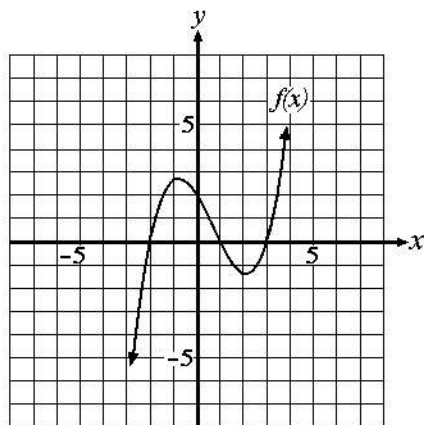
B. $g(x) = x, h(x) = x^3$

C. $g(x) = \sqrt{x}, h(x) = x^3 - 5$

D. $g(x) = x^3 - 5, h(x) = \sqrt{x}$

44. If $f(x) = 3x - 5$ and $g(x) = (x + 2)^2 - 3$, determine $g(f(4))$.

45. The graphs of $f(x)$ and $g(x)$ are given below. Determine $f(g(-3))$.



A. -6

B. -2

C. 0

D. 3

46. Given the functions $f(x) = x^2 - 8$ and $g(x) = -5 - x$, determine an equation for the combined function $h(x) = f(g(x))$.
- A. $h(x) = x^2 + 10x + 17$ B. $h(x) = x^2 - 10x + 3$
C. $h(x) = -x^2 - 13$ D. $h(x) = -x^2 + 3$
47. Given the function $f(x) = x^2 - 5$, determine the value of $f(f(-1))$.
- A. -4 B. 11 C. 16 D. -8
48. Given the functions $f(x) = \sqrt{4+x}$ and $g(x) = |3x - 6|$,
- a) Evaluate $f(g(-5))$.
- b) Is it possible to evaluate $g(f(-5))$?