1. **The table of values represents all points in the function $g(x)$.**

x	$g(x)$
–6	3
–3	9
0	–3
3	–1
5	6

What is the value of $g^{-1}(3)$?

normally $x=3$

inversely

$y=3$ so $x=?$

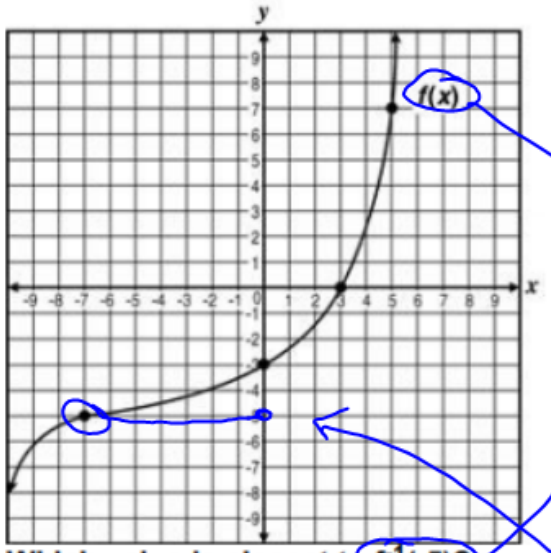
A. -1

B. -6

C. 9

D. 0

2. **The graph of the function $f(x)$ is shown on the coordinate plane.**



Which value is closest to $f^{-1}(-5)$?

A. -7

B. -5

C. -4

D. -2

opposites
inverses

start on y-axis
@ -5

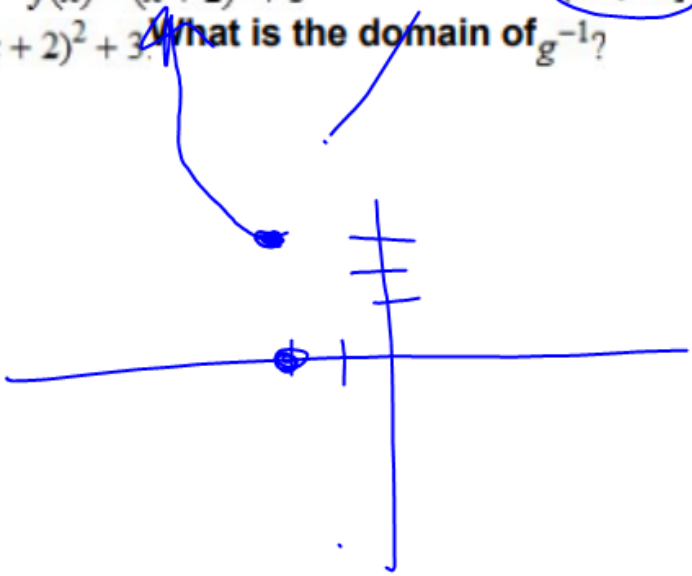
3. **The domain of the function $f(x) = (x+2)^2 + 3$ is restricted to $(-\infty, -2]$ to produce an invertible function $g(x) = (x+2)^2 + 3$. What is the domain of g^{-1}?**

A. $(-\infty, \infty)$

B. $(-\infty, -2]$

C. $[-2, -\infty)$

D. $[3, \infty)$



Domain of $g(x)$ $(-\infty, -2)$

Range: $(3, \infty)$

$g^{-1}(x)$

4. What is the inverse function of $f(x) = \frac{4}{x-3}$? $(x \neq 3)$

A. $f^{-1}(x) = \frac{4}{x} + 3 \quad (x \neq 0, 3)$

B. $f^{-1}(x) = \frac{4}{x} - 3 \quad (x \neq 0, 3)$

C. $f^{-1}(x) = \frac{x-3}{4} \quad (x \neq 3)$

D. $f^{-1}(x) = \frac{7}{x} \quad (x \neq 0, 3)$

$(y-3) \cdot x = \frac{4}{(y-3)} \cdot (y-3)$

$\frac{(y-3)x}{x} = \frac{4}{x}$

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

$+3 \quad +3$

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

5. **What is the inverse of** $f(x) = 5x + 6$?

A. $f^{-1}(x) = -5x - 6$

B. $f^{-1}(x) = \frac{x-6}{5}$

C. $f^{-1}(x) = \frac{x-5}{6}$

D. $f^{-1}(x) = 6x + 5$

$x = 5y + 6$
$-6 \quad -6$

$\frac{x-6}{5} = \frac{5y}{5}$

$\frac{x-6}{5} = y$

6. **Which equation represents the inverse, $f^{-1}(x)$, of the function $f(x) = 3x + 1$?**

A. $f^{-1}(x) = \frac{1}{3}x + 1$

B. $f^{-1}(x) = \frac{1}{3}x - 1$

C. $f^{-1}(x) = \frac{1}{3}x - \frac{1}{3}$

D. $f^{-1}(x) = \frac{1}{3}x + \frac{1}{3}$

$x = 3y^{-1} + 1$

$x - 1 = 3y^{-1}$

$\frac{x-1}{3} = y^{-1}$

$\frac{1}{3}x - \frac{1}{3} = y^{-1}$

7. **What is the inverse function of** $y = \sqrt{x - \frac{1}{2}}, x \geq \frac{1}{2}$?

A. $y = x^2 + \frac{1}{2}, x \geq 0$

B. $y = x^2 - \frac{1}{2}, x \geq 0$

C. $y = x^2 + \frac{1}{4}, x \geq 0$

D. $y = x^2 - \frac{1}{4}, x \geq 0$

$x = \sqrt{y - \frac{1}{2}}$

$x^2 = y - \frac{1}{2}$

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

8. **What is the inverse function of** $y = 4x^2 - 16$?

A. $y = \sqrt{\frac{x}{4} + 4}; x \geq -16$

B. $y = \frac{\sqrt{x} + 4}{2}; x \geq 0$

C. $y = \sqrt{x + 4}; x \geq -4$

D. $y = \frac{\sqrt{x + 16}}{4}; x \geq -16$

$x = 4y^2 - 16$

$\sqrt{x+16} = \sqrt{4y^2}$

$\frac{x+16}{4} = y^2 \rightarrow \frac{1}{4}x + 4$

or $\sqrt{\frac{1}{4}x + 4}$

$\frac{\sqrt{x+16}}{2} = \frac{2y}{2}$

9. **The point (5, –8) lies on the graph of the function, *f*(*x*). Which of the following points lies on the graph of the function's inverse, $f^{-1}(x)$?**

x y

A. $(-8, 5)$

B. $\left(\frac{1}{5}, -\frac{1}{8}\right)$

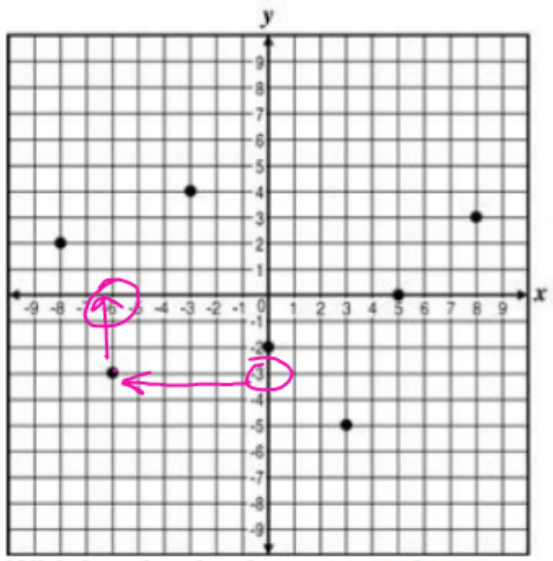
C. $(-5, 8)$

D. $\left(-\frac{1}{5}, \frac{1}{8}\right)$

(-8, 5)

flip flop x and y

10. **The graph of the function $f(x)$ is shown on the coordinate plane.**



Which value is closest to $f^{-1}(-3)$?

$y=-3 \quad x=?$

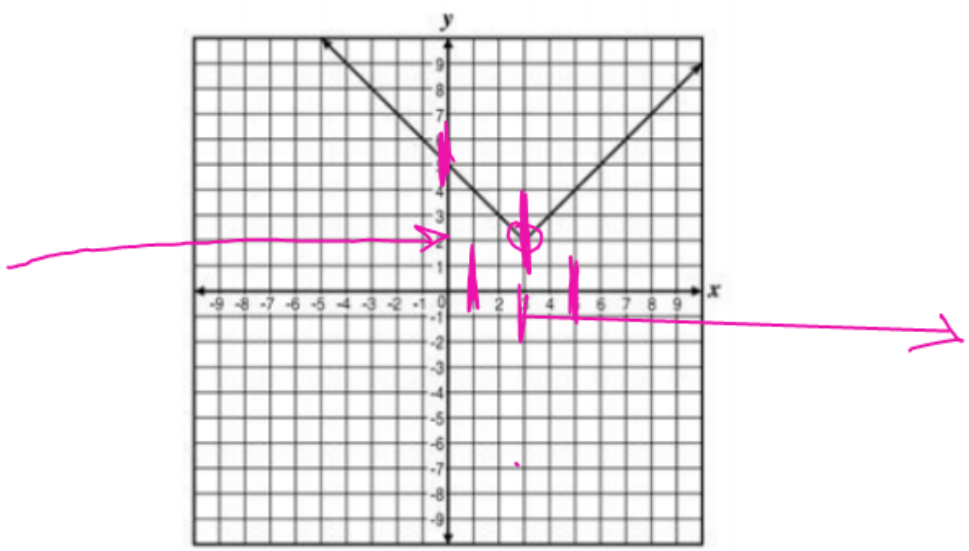
A. −6

B. −5

C. 4

D. 8

11. **Function *g* is graphed below.**



For which restrictions of the domain is the inverse of function *g* not a function?

A. $-\infty \le x \le 0$ ✓

B. $0 \le x \le 3$ ✓

C. $1 \le x \le 5$ no

D. $3 \le x \le \infty$ ✓

12. **The inverse of $f(x) = 2x^3 - 6x^2 - 36x + 1$ is not a function. Which of the restrictions on the domain of $f(x)$ ensures that $f^{-1}(x)$ is a function?**

I $-\infty < x < -2$ ✓
II $3 \leq x < \infty$ ✗
III $-2 \leq x < 3$ ✗

A. I only

B. I and II only

C. III only

D. I, II, and III

13. **The inverse of the function $f(x) = x^2 + 6x + 5$ is not a function. Which restriction of $f(x)$ ensures that the inverse of $f(x)$ is a function?**

A. restrict the domain of $f(x)$ to $-5 \le x \le -1$

B. restrict the range of $f(x)$ to $-4 \le f(x) \le 0$

C. restrict the domain of $f(x)$ to $-3 \le x \le -1$

D. restrict the range of $f(x)$ to $0 \le f(x) \le 5$

$\frac{-b}{2a}$ $\frac{-6}{2(1)} = -3$

$(x+1)(x+5)$

-1 , -5

which one doesn't cross -3

it can start/end w/ -3 but not have -3 in middle

14. **What is the inverse function of $y = \sqrt{x+3}$, given $x \geq -3$?**

A. $y = -\sqrt{x+3}; x \geq -3$

B. $y = \sqrt{x-3}; x \geq 3$

C. $y = x^2 + 9; x \geq 0$

D. $y = x^2 - 3; x \geq 0$

$x^2 - 3$

15. **A function is defined by the equation $y = 3x - 8$. Which equation represents the inverse of this function?**

A. $y = \frac{1}{3x - 8}$

B. $y = 8 - 3x$

C. $y = \frac{3}{x} + \frac{8}{3}$

D. $y = \frac{x + 8}{3}$

$\frac{x+8}{3}$ or $\frac{x}{3} + \frac{8}{3}$