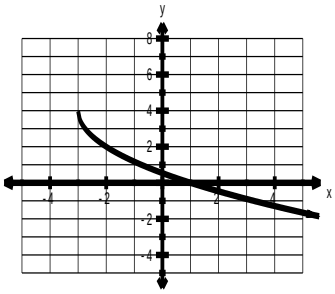
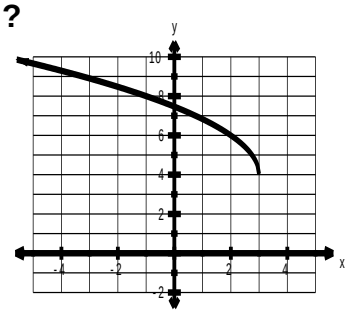
1. Which of the following represents the graph of $y = 2\sqrt{-x+3} - 4$**?**

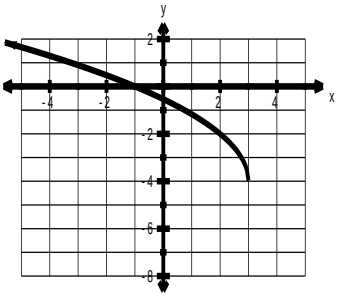
A)



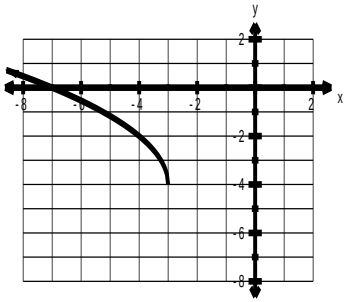
B)



C)



D)



2. Given that $f(x) = \sqrt{x}$ has been stretched horizontally by a factor of $\frac{1}{2}$**,** reflected across the x-axis, moved left 3 units, and moved up 1 unit, which of the following equations represents the transformed image?

A) $g(x) = -\sqrt{\frac{1}{2}(x+3)} + 1$

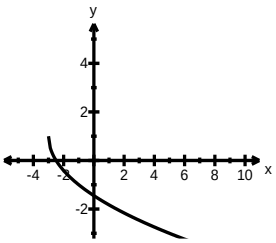
B) $g(x) = -\sqrt{2(x-3)} - 1$

C) $g(x) = -\sqrt{2(x+3)} + 1$

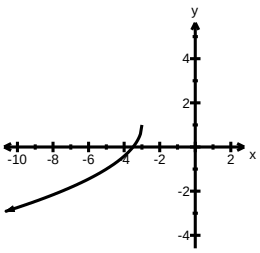
D) $g(x) = -\sqrt{2(x-3)} + 1$

3. Given $f(x)=\sqrt{x}$, which of the following graphs represents a transformation $y=a\sqrt{b(x-h)}+k$ for $a<0,\ b<0,\ h<0$ and $k>0$?

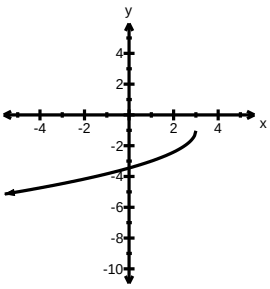
A)



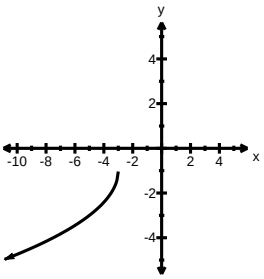
B)



C)



D)



4. What are the domain and range for $y-4=-\sqrt{\frac{1}{2}x-4}$?

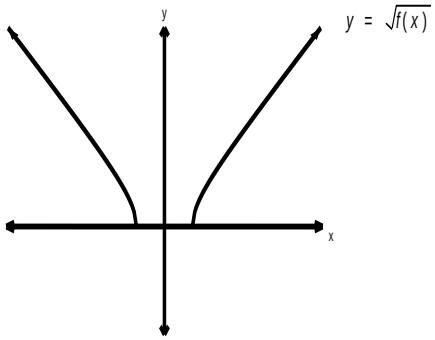
A) $D:\ \{x|x\geq 4, x\in R\}$
$R:\ \{y|y\geq 4, y\in R\}$

B) $D:\ \{x|x\geq 4, x\in R\}$
$R:\ \{y|y\leq 4, y\in R\}$

C) $D:\ \{x|x\geq 8, x\in R\}$
$R:\ \{y|y\leq 4, y\in R\}$

D) $D:\ \{x|x\leq 8, x\in R\}$
$R:\ \{y|y\geq 4, y\in R\}$

5. The graph of $y=\sqrt{f(x)}$ is shown in the graph. Which of the following equations could represent the equation for $y=f(x)$?



A) $f(x)=x^2+4$

B) $f(x)=x^2-4$

C) $f(x)=-x^2+4$

D) $f(x)=-x^2-4$

6. Which function has a range of $y \mid y \leq 0, y \varepsilon R$?

A) $y=-\sqrt{x-3}$

B) $y=\sqrt{-x}-3$

C) $y=\sqrt{-(x-3)}$

D) $y=-\sqrt{x}-3$

7. Which set of transformations would map $y=\sqrt{x}$ onto $y=-\sqrt{4(x+2)}+3$?

A) Reflection in the x-axis, horizontal stretch by a factor of 4, translation of 2 units right and 3 units down.

B) Reflection in the x-axis, horizontal stretch by a factor of ¼ , translation of 2 units left and 3 units up.

C) Reflection in the y-axis, horizontal stretch by a factor of 4, translation of 2 units right and 3 units down.

D) Reflection in the y-axis, horizontal stretch by a factor of ¼ , translation of 2 units left and 3 units up

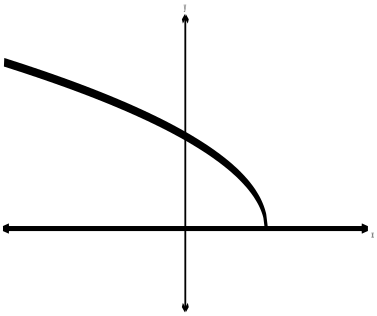
8. Which function best represents the graph shown below?

A) $y = \sqrt{-(x-2)}$

B) $y = \sqrt{-x} - 2$

C) $y = -\sqrt{(x-2)}$

D) $y = -\sqrt{x} - 2$



9. Which mapping rule would map $y = \sqrt{x}$ onto $-\frac{1}{3}(y+2) = \sqrt{2x+6}$?

A) $(x, y) \rightarrow (\frac{1}{2}x - 6, -3y - 2)$

B) $(x, y) \rightarrow (\frac{1}{2}x - 3, -3y - 2)$

C) $(x, y) \rightarrow (2x - 6, -\frac{1}{3}y + 2)$

D) $(x, y) \rightarrow (2x - 3, -\frac{1}{3}y + 2)$

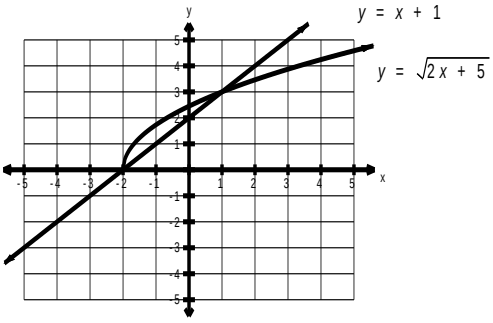
10. Use the graph provided to solve the equation, $\sqrt{3x+6} = x+2$.

A) $x = 0$ and $x = 3$

B) $x = 1$

C) $(0, -2)$ and $(1, 3)$

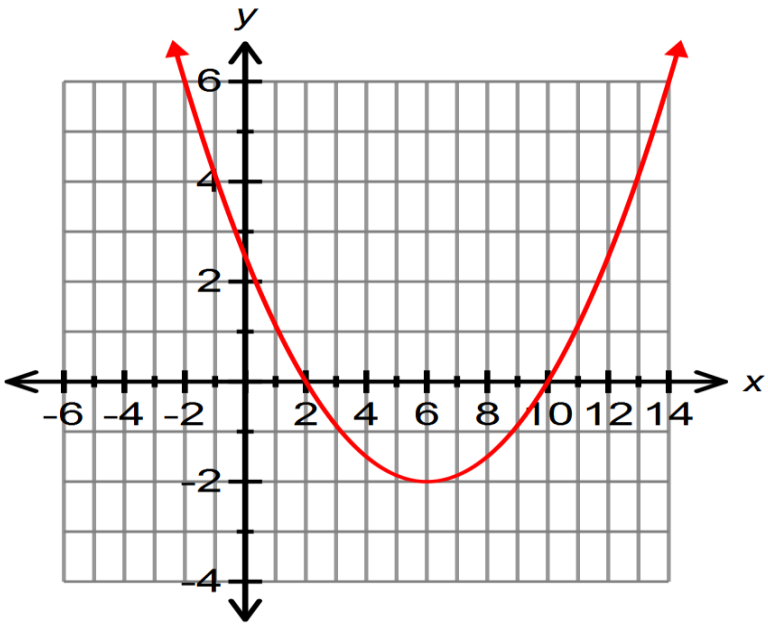
D) $x = -2$ and $x = 1$



11. State the invariant points for the graph of $f(x) = 6x^2 - x$ and $y = \sqrt{f(x)}$?

12. State the domain of $f(x) = \sqrt{3-12x}$.

13. The graph of $y = f(x)$ is shown.



a) On the same grid, sketch the graph of the function $y = \sqrt{f(x)}$ including all invariant points.

b) State the domain and range of $y = \sqrt{f(x)}$.

c) State where the function $y = \sqrt{f(x)}$ is undefined and justify your reasoning.

14. Algebraically determine the domain and range of $y = \sqrt{-2x^2 - 8x + 24}$

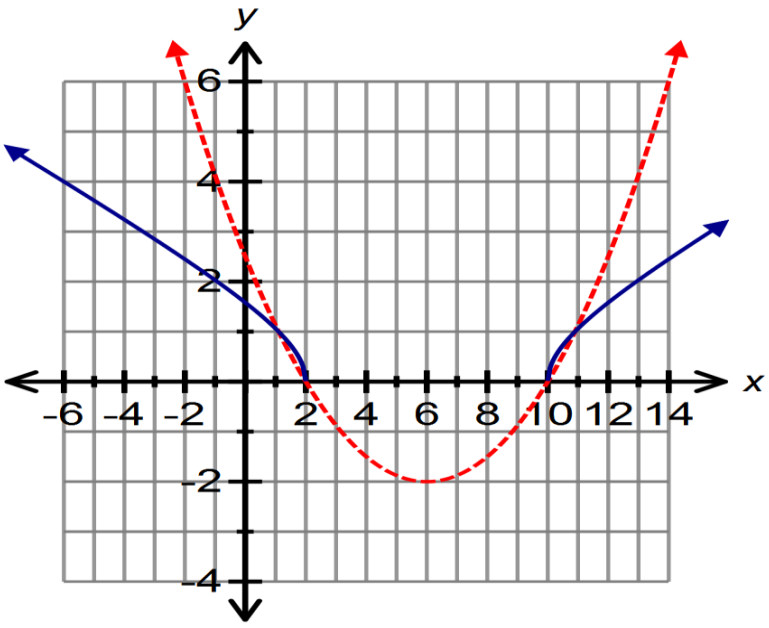
Answers:

1. C	2. C	3. B	4. C	5. B	6. A	7. B
8. A	9. B	10. D				

11. $(0,0),\left(\frac{1}{6},0\right),(-\frac{1}{3},1),(\frac{1}{2},1)$

12. $x \mid x \leq \frac{1}{4}\, x \varepsilon R$

13.



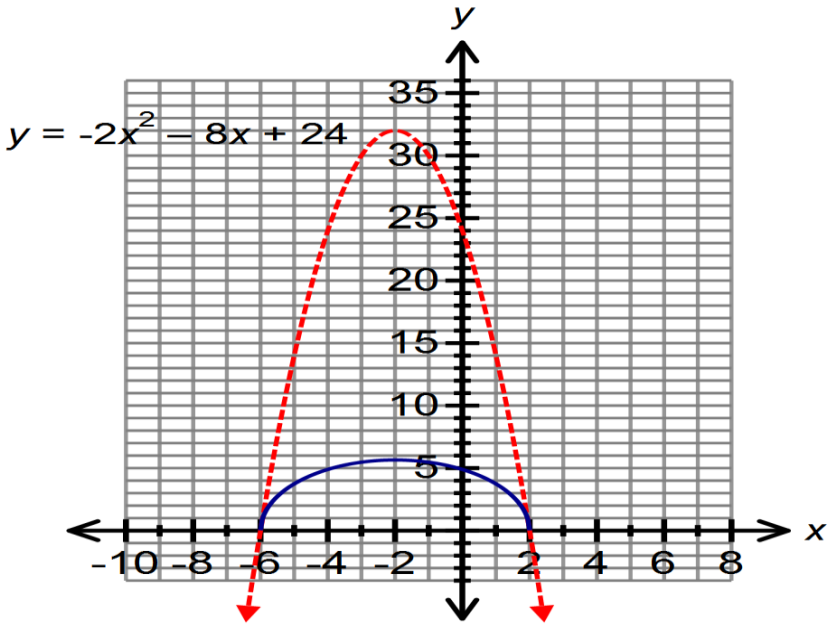
a) Invariant points (2,0), (10, 0), (1,1), (11,1)

b) Domain of $y = \sqrt{f(x)}$: $x \geq 10, x \leq 2, x \in R$

Range of $y = \sqrt{f(x)} : y \geq 0, y \in R$

c) $y = \sqrt{f(x)}$ is undefined $2 < x < 10, x \in R$ (or (2,10)) since the y-values of the function is negative and the square root of a negative number is undefined.

14.



x-intercepts of $y = f(x)$ are x=-6 and x=2

Vertex of $y = f(x)$ is (-2, 32)

Vertex of $y = \sqrt{f(x)}$ is $(-2, \sqrt{32})$

Domain of $y = \sqrt{f(x)}$: [-6, 2]

Range of $y = \sqrt{f(x)}$: [0, $\sqrt{32}$]