

Given $f(x) = 2x^2 - 4x + 3$ and $g(x) = x - 5$, find the value of each expression below.

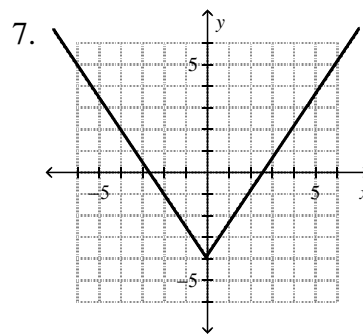
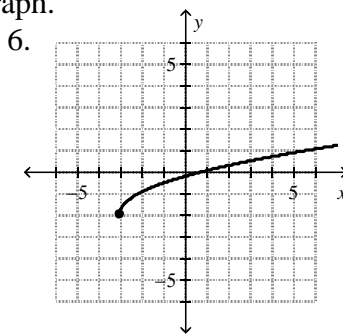
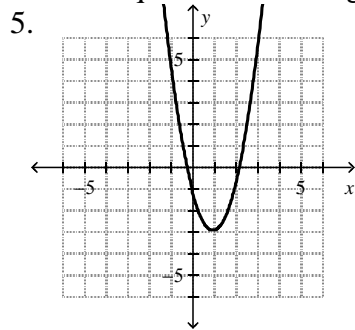
1. $f(-3a)$

2. $f(3 - i)$

3. $g(f(-2))$

4. $f(g(x)) = 73$

Find an equation that will generate each graph.

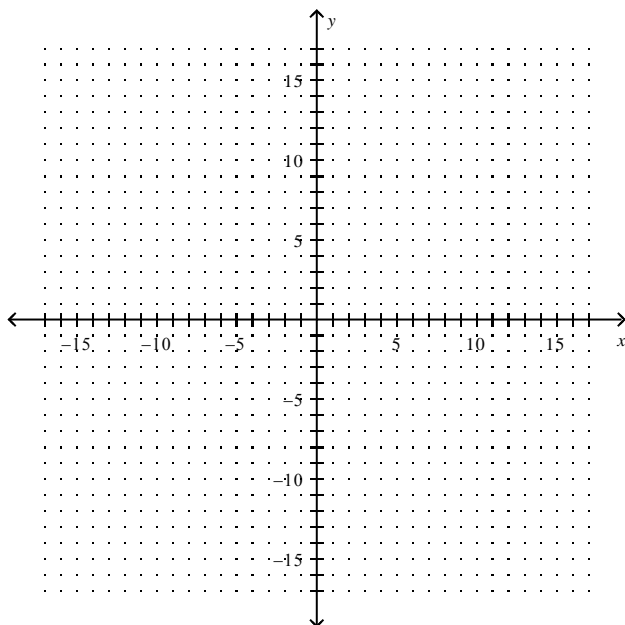


8. Solve $7 = x + \sqrt{2x + 1}$ and check your solution(s).

9. A pitcher throws a ball to the batter. The ball leaves the bat 4 feet above the ground and it travels 100 horizontal feet before it is caught 4 feet above the ground by the short stop. The ball reaches a maximum height of 54 feet. Write an equation to model the path of the baseball.

Graph the following. You must include a two-sided x/y chart.

10. $y = 3\left(\frac{1}{4}\right)^{x-5} - 6$



Describe the transformation in words:

Domain:

Range:

Asymptote(s):

11. Find the equation in standard form ($y = ax^2 + bx + c$) of the parabola that passes through the points $(4, -1)$, $(-2, 14)$, and $(6, -2)$. Solve algebraically and show all your work.

b. Solve the same system using inverse matrix method.

12. Consider the functions $f(x) = \sqrt{x}$ and $g(x) = 7x + b$. If $y = f(g(x))$ is a new function that passes through the point $(4, 6)$ when graphed in a standard coordinate plane, what is the value of b ?

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|------|-------|--------|--------|--------------------|
| A. 8 | B. -8 | C. -25 | D. -26 | E. $4 - 7\sqrt{6}$ |
|------|-------|--------|--------|--------------------|

For #13 – #17 use the following matrices and your brain (no calculator). If it is undefined, write undefined.

$$A = \begin{bmatrix} 2 & 4 & 0 & 3 \\ -3 & 8 & 4 & 2 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 \\ -3 & 2 \end{bmatrix}$$

$$C = \begin{bmatrix} 2 & 6 \\ 3 & -4 \\ -2 & 8 \\ -1 & 0 \end{bmatrix}$$

$$D = \begin{bmatrix} 4 & -3 \\ 9 & 5 \end{bmatrix}$$

13. $3C$

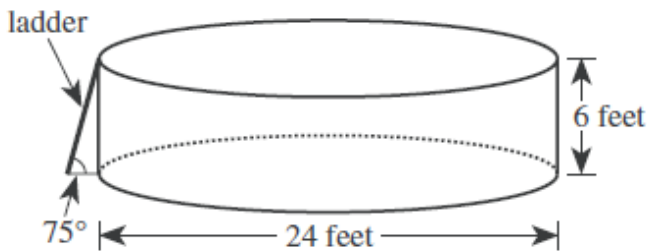
14. $B - 2D$

15. CD

16. BA

17. $AC - BD$

18. The youth center has installed a swimming pool on level ground. The pool is a right circular cylinder with a diameter of 24 feet and a height of 24 feet. To the nearest cubic foot, what is the volume of water that will be in the pool when it is filled to a depth of 5 feet?



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|---------------|-----------------|-----------------|-----------------|------------------|
| F. 942 | G. 1,885 | H. 2,262 | J. 9,047 | K. 11,310 |
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