1. Find the slope, m, and the y-intercept, b, of the line given by the equation $3x-4y=8$.

A. $m=-\frac{3}{4};\ b=-2$

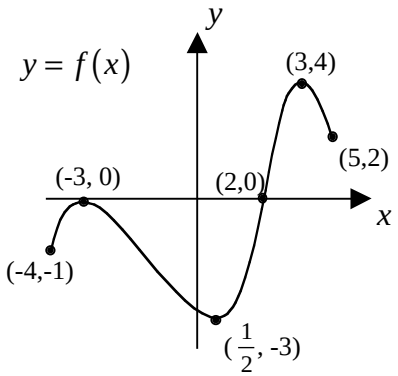
B. $m=\frac{3}{4};\ b=8$

C. $m=-\frac{3}{4};\ b=8$

D. $m=\frac{3}{4};\ b=-2$

E. None of the above

Use the graph of a function f, shown below, to answer questions #2 and #3.



2. Find the domain, D, and the range, R, of the function f shown above.

A. $D=[-4,-1];\ R=[5,2]$

B. $D=\left[\frac{1}{2},-3\right];\ R=[3,4]$

C. $D=[-3,4];\ R=[-4,5]$

D. $D=[-1,2];\ R=[-4,5]$

E. None of the above

3. Use the graph of the function f, shown above, to find the intervals on which f is increasing. Express your answer in interval notation.

A. $[2,\infty)$

B. $[-1,0]\cup[-3,4]$

C. $[-4,-3]\cup\left[\frac{1}{2},3\right]$

D. $[-4,-1]\cup[5,2]$

E. None of the above

4. If $f(x) = 4x^3 - kx^2 + x - 3k$, find k such that the graph of f contains the point $(-2, 29)$.

A. $k = 63$

B. $k = -208$

C. $k = \frac{1}{7}$

D. $k = -9$

E. None of the above

5. Given the function $f(x) = x^2 - x + 2$, find and simplify $\frac{f(a+h) - f(a)}{h}$ (assume $h \neq 0$).

A. $2a - 1$

B. $h - 1$

C. $2a + h - 1$

D. $2a + h$

E. None of the above

6. Assume y is directly proportional to the square root of x and inversely proportional to the product of w and z. If $y = 2.1$ when $x = 49$, $w = 5$, and $z = 2$, find the constant of proportionality k.

A. $k = 3$

B. $k = 0.009$

C. $k = 0.33$

D. $k = 1.47$

E. None of the above

7. Given the functions $f(x) = x^2 - 4$ and $g(x) = 2x + 3$, find and simplify $(g \circ f)(x)$.

A. $4x^2 + 5$

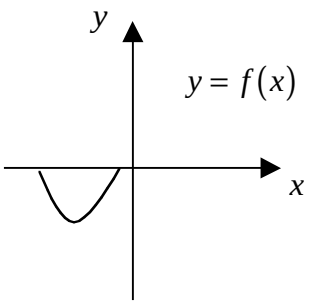
B. $2x^3 + 3x^2 - 8x - 12$

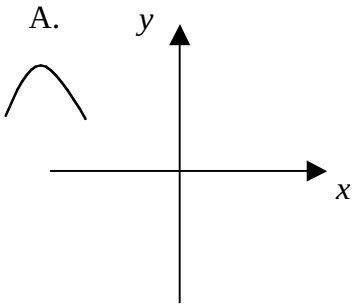
C. $4x^2 + 12x + 5$

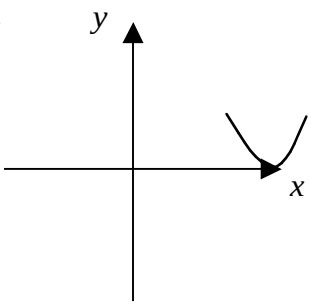
D. $2x^2 - 5$

E. None of the above

8. Given the graph of a function $y = f(x)$, shown below, which of the following depicts the graph of $y = -f(x-3)+2$?



A.


B.


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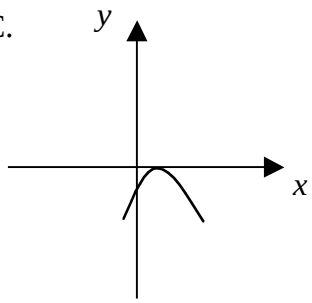
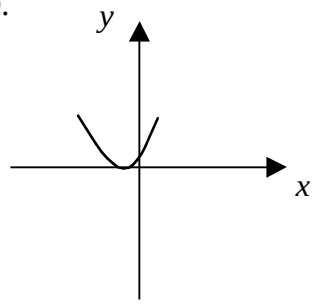
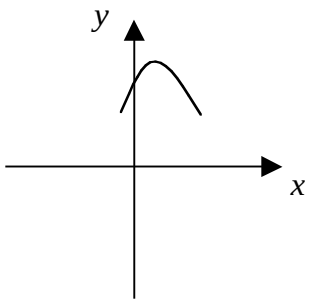


D.


E.


9. Given the function, $h(x) = \dfrac{5}{4-x}$, find $h^{-1}(x)$.

A. $h^{-1}(x) = \dfrac{4x-5}{x}$

B. $h^{-1}(x) = \dfrac{4-x}{5}$

C. $h^{-1}(x) = \dfrac{x-4}{5}$

D. $h^{-1}(x) = \dfrac{5-4x}{x}$

E. $h^{-1}(x) = -\dfrac{5}{4-x}$

10. Solve the following system of equations for x:

$$\begin{cases} x^2 + y^2 = 5 \\ 3x + y = 1 \end{cases}$$

A. $x = \frac{\sqrt{10}}{5}, \quad x = -\frac{\sqrt{10}}{5}$

B. $x = -\frac{2}{5}, \quad x = 1$

C. $x = \frac{\sqrt{2}}{2}, \quad x = -\frac{\sqrt{2}}{2}$

D. $x = \frac{11}{5}, \quad x = -2$

E. None of the above

11. Let $y = f(x)$ be a function with domain $D = [3,8]$ and range $R = [-4,6]$. Find the domain D and the range R for the function $y = 5f(2x)$.

A. $D = [15,16]; \quad R = [-20,12]$

B. $D = \left[\frac{3}{2}, 40\right]; \quad R = [-2,30]$

C. $D = [6,16]; \quad R = [-20,30]$

D. $D = \left[\frac{3}{2}, 4\right]; \quad R = [-20,30]$

E. $D = [6,40]; \quad R = [-8,30]$

12. Find the standard equation of a parabola that has a vertical axis, vertex $(-3,-7)$, and x- intercept 5.

A. $y = 5(x-3)^2 - 7$

B. $y = \frac{4}{3}(x+3)^2 - 7$

C. $y = 5(x+3)^2 - 7$

D. $y = \frac{7}{4}(x-3)^2 - 7$

E. $y = \frac{7}{64}(x+3)^2 - 7$

13. A movie theater charges \$9 for adults and \$7 for senior citizens. On a day when 325 people paid an admission, the total receipts were \$2495. If x represents the number of adults who paid an admission, find the equation that would be used to find x.

A. $9(2495-x)+7x=325$

B. $9x+7(325-x)=2495$

C. $9x+7(2495-x)=325$

D. $9(325-x)+7x=2495$

E. None of the above

14. Chris borrowed a sum of money (interest-free) from his dad. After three months, the balance owed was \$660. Chris owed a balance of \$420 after seven months. Assume that Chris has been making and continues to make equal payments to his dad each month until the loan is paid off. Express the balance, P, of the loan in terms of the number of months, t, since the money was borrowed.

A. $P(t)=-60t+660$

B. $P(t)=-\frac{1}{60}t+14$

C. $P(t)=-60t+840$

D. $P(t)=-\frac{1}{60}t+660$

E. None of the above