

Note: Certain questions have been more challenging for students. Questions marked (***) are similar to those challenging questions.

1. Given $f(x) = 7x - 2x^2$, evaluate $f(a+4)$.

(A) $f(a+4) = -2a^2 + 7a - 28$

(B) $f(a+4) = -2a^2 - 9a - 4$

(C) $f(a+4) = -2a^2 + 23a + 60$

(D) $f(a+4) = -2a^2 - 9a - 28$

(E) None of these

2. (***) A company has 4 marketing analysts and asks each person to make predictions for products that will be sold. Which one of the tables below represents y as a function of x ?

(A)

Year (x)	2018	2018	2018	2018
Sales (y)	3100	1400	2200	4900

(B)

Year (x)	2018	2018	2018	2018
Color (y)	Blue	Green	Blue	Red

(C)

Sales (x)	3100	1400	2200	4900
Price (y)	\$60	\$85	\$60	\$30

(D)

Price (x)	\$50	\$20	\$20	\$50
Sales (y)	1500	3700	3200	2000

(E)

Year (x)	2018	2018	2019	2019
Price (y)	\$80	\$60	\$70	\$50

3. (***) An item is originally priced at P dollars, but is placed on sale at a discount of 25% off. If the sales tax is 10%, which of these expresses the final sales price, F , in dollars, as a function of P ?

(A) $F(P) = 1.1(0.25P)$

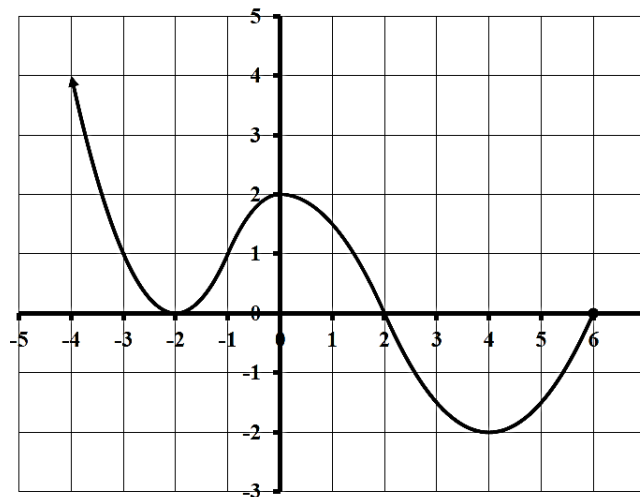
(B) $F(P) = \frac{1.1P}{0.75}$

(C) $F(P) = \frac{0.75P}{1.1}$

(D) $F(P) = \frac{1.1P}{0.25}$

(E) $F(P) = 1.1(0.75P)$

4. (***) Identify the open interval(s) where the graph of $y = T(x)$ is positive.



(A) $(-\infty, 2)$ only

(B) $(-2, 0)$ and $(4, 6)$ only

(C) $(-2, 2)$ only

(D) $(-\infty, -2)$ and $(-2, 0)$ only

(E) $(-\infty, -2)$ and $(-2, 2)$ only

5. Write the equation of the linear function passing through the points (2, 3) and (5, -15).

(A) $y = -4x + 11$

(B) $y = -6x + 9$

(C) $y = -4x + 5$

(D) $y = 6x - 9$

(E) $y = -6x + 15$

A company invests \$78,750 in the production of iPhone cases. On the average, it costs them \$7.50 to make each case and each case can be sold for \$10.50. Use this information to answer questions 6 and 7.

6. Create a formula for a cost function and a revenue function, both in dollars. Let x be the number of cases produced sold.

(A) $C(x) = 7.5x$ and $R(x) = 10.5x$

(B) $C(x) = 7.5x + 78,750$ and $R(x) = 10.5x$

(C) $C(x) = 10.5x + 78,750$ and $R(x) = 7.5x$

(D) $C(x) = 10.5x$ and $R(x) = 7.5x$

(E) $C(x) = 78,500$ and $R(x) = 3x$

7. How many cases must the company sell to break even?

(A) 4,375

(B) 10,500

(C) 26,250

(D) 7,500

(E) None of these

8. A concert venue holds a maximum of 1000 people. With ticket prices at \$50, the average attendance is 600 people. For every \$5 the ticket price is lowered, approximately 25 more people attend. Which of the following represents the number of people attending as a function of price?

(A) $N(p) = -5p + 600$

(B) $N(p) = -5p + 850$

(C) $N(p) = 5p + 350$

(D) $N(p) = -\frac{1}{5}p + 850$

(E) $N(p) = \frac{1}{5}p + 350$

9. Nell has a sales clerk job that pays \$12 per hour for regular work hours (less than or equal to 40 hours per week). She gets double time (or \$24 per hour) for any hours over 40 that she works in a week. Which of the following functions can be used to represent Nell's weekly pay for working h hours in a week?

(A) $P(h) = \begin{cases} 12 & 0 < h \leq 40 \\ 24 & h > 40 \end{cases}$

(B) $P(h) = \begin{cases} 12h & 0 < h \leq 40 \\ 24h & h > 40 \end{cases}$

(C) $P(h) = \begin{cases} 12h & 0 < h \leq 40 \\ 24h - 480 & h > 40 \end{cases}$

(D) $P(h) = \begin{cases} 12h & 0 < h \leq 40 \\ 24h + 480 & h > 40 \end{cases}$

(E) $P(h) = \begin{cases} 12(40) & 0 < h \leq 40 \\ 24h & h > 40 \end{cases}$

10. Determine the x – intercepts for the piecewise function given below.

$$h(x) = \begin{cases} -3x + 4 & \text{if } x \leq -3 \\ 100 - x & \text{if } -3 < x \leq 1 \\ 2x - 5 & \text{if } x > 1 \end{cases}$$

(A) $\left(\frac{4}{3}, 0\right)$

(B) $(100, 0)$

(C) $\left(\frac{5}{2}, 0\right)$

(D) $\left(\frac{4}{3}, 0\right), (100, 0)$ and $\left(\frac{5}{2}, 0\right)$

(E) There are no x – intercepts.

11. (***) Which one of the following transforms the graph of $y = f(x)$ with a vertical compression and a horizontal stretch?

(A) $y = 3f(2x)$

(B) $y = \frac{1}{3}f(2x)$

(C) $y = 3f(-x)$

(D) $y = 3f\left(\frac{1}{2}x\right)$

(E) $y = \frac{1}{3}f\left(\frac{1}{2}x\right)$

12. (***) Consider the table of values for the function $y = h(x)$ given below.

x	-4	1	6	10
$h(x)$	3	-8	4	5

Which one of the following tables of values represents $y = h(2x) - 4$?

(A)

x	-8	2	12	20
$h(2x) - 4$	-1	-12	0	1

(B)

x	-12	-2	8	16
$h(2x) - 4$	3	-8	4	5

(C)

x	-8	2	12	20
$h(2x) - 4$	7	-4	8	9

(D)

x	-4	1	6	10
$h(2x) - 4$	2	-20	4	6

(E)

x	-2	0.5	3	5
$h(2x) - 4$	-1	-12	0	1

Questions 13 and 14 refer to the following situation. The function $C = f(D)$ represents the standard cost, in dollars, of a certain rideshare company given you travel D miles. On Friday nights the company doubles its cost. You and your friends are planning to go out on Friday and you have a coupon that reduces the overall cost by \$4.

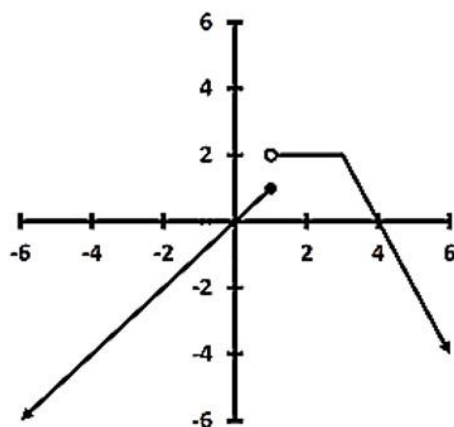
13. What type of transformation is “the company doubles its cost”?

- (A) Horizontal Stretch
- (B) Horizontal Shift
- (C) Vertical Stretch
- (D) Vertical Shift
- (E) Reflection

14. What type of transformation is “a coupon that reduces the overall cost by \$4”?

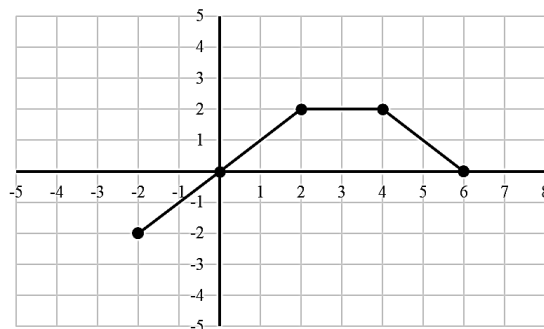
- (A) Horizontal Compression
- (B) Horizontal Shift
- (C) Vertical Compression
- (D) Vertical Shift
- (E) Reflection

15. Determine the range of the graphed function below.



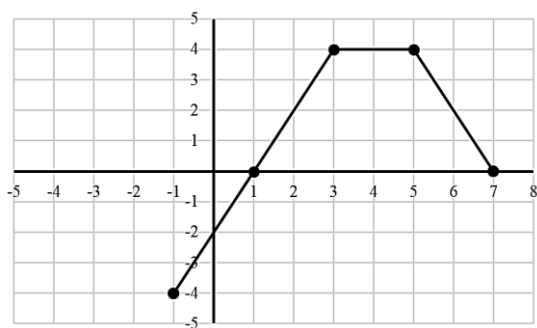
- (A) The range is $(-\infty, 2]$
- (B) The range is $(-\infty, 2)$
- (C) The range is $(-\infty, \infty)$
- (D) The range is $(-\infty, 1] \cup (1, \infty)$
- (E) The range is $(-6, 6)$

16. Consider the graph of the function $y = T(x)$, given below.

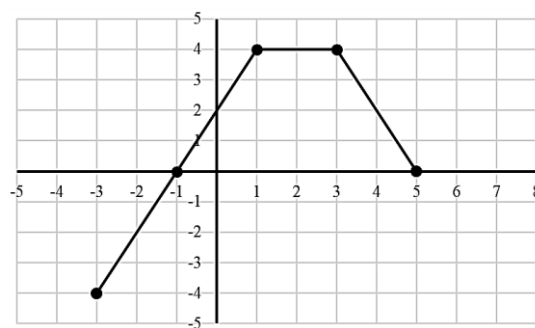


Which one of the following graphs represents $y = 2T(x-1)$?

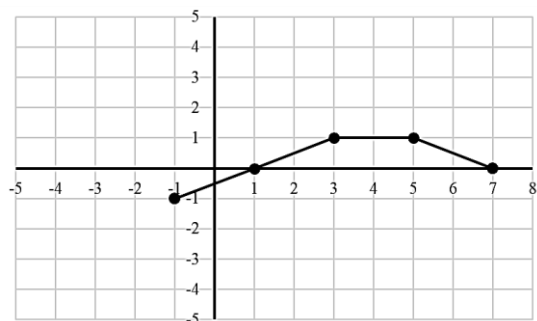
(A)



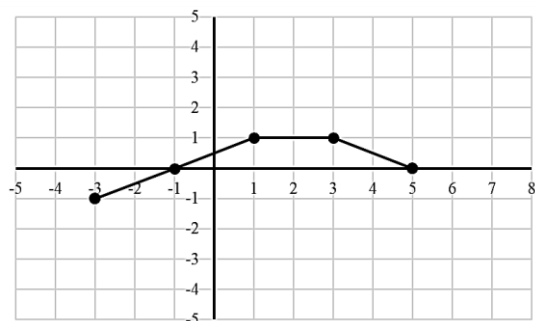
(B)



(C)



(D)



Midterm 1 Practice Exam 3 Answers	
Question	Answer
1	B
2	C
3	E
4	E
5	E
6	B
7	C
8	B
9	C
10	C
11	E
12	E
13	C
14	D
15	A
16	A