

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

1. Determine the domain of $h(x) = \sqrt{3+7x}$.

- (A) $\left[-\frac{3}{7}, \infty\right)$ (B) $\left(-\frac{3}{7}, \infty\right)$ (C) $[0, \infty)$
(D) $\left(-\infty, -\frac{3}{7}\right]$ (E) $\left(-\infty, -\frac{3}{7}\right)$

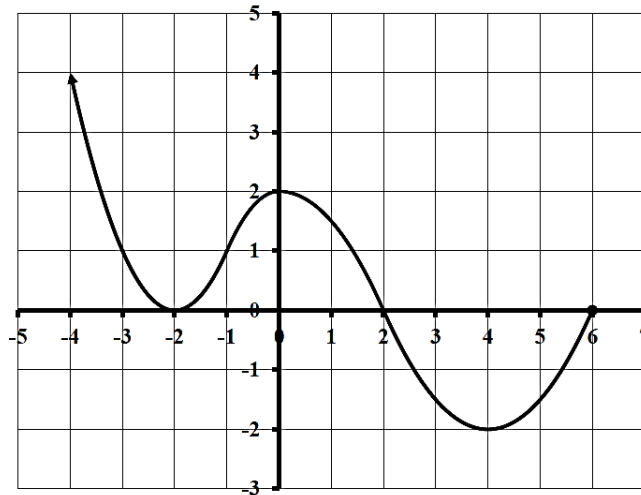
2. (***) Which one of these equations represents y as a function of x ?

- (A) $x^2 + y^2 - 4 = 0$ (B) $3 + xy^2 = 0$
(C) $x^3 + 5y^4 = -2$ (D) $5x + y^2 = 10$
(E) $3y^3 + 2x = 7$

3. A new car salesperson is paid a monthly salary of \$500 plus a commission of 5% of all the sales she makes each month. What monthly sales amount would give her of a monthly income of \$1,200?

- (A) \$35
- (B) \$1,400
- (C) \$3,500
- (D) \$14,000
- (E) \$34,000

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



- (A) $(-\infty, -2)$ and $(0, 4)$ only
- (B) $(2, 6)$ only
- (C) $(-\infty, -2)$ and $(-2, 0)$ only
- (D) $(-\infty, -2)$ and $(0, 2)$ only
- (E) $(-\infty, -2)$ only

5. Determine the intercepts of $g(x) = \sqrt{3x+4}$.

- (A) $\left(-\frac{4}{3}, 0\right)$ and $(0, 4)$ only
- (B) $\left(-\frac{4}{3}, 0\right)$ and $(0, 2)$ only
- (C) $(4, 0)$ and $\left(0, -\frac{4}{3}\right)$ only
- (D) $(2, 0)$ and $\left(0, -\frac{4}{3}\right)$ only
- (E) None of these

A couple invests \$3500 to build a rose garden. On the average, it costs them \$0.35 to grow each rose and each rose can be sold for \$1.75. 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 roses sold.

- (A) $C(x) = 1.75x$ and $R(x) = 0.35x$
- (B) $C(x) = 1.75x + 3500$ and $R(x) = 0.35x$
- (C) $C(x) = 0.35x + 3500$ and $R(x) = 1.75x$
- (D) $C(x) = 0.35x$ and $R(x) = 1.75x$
- (E) $C(x) = 3500$ and $R(x) = 1.40x$

7. How many roses must the couple sell to break even?

- (A) 2,000
- (B) 2,500
- (C) 10,000
- (D) 8,250
- (E) None of these

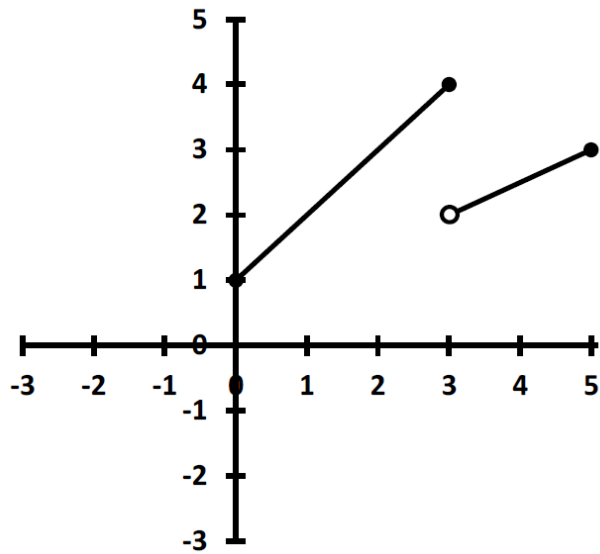
8. The typical costs for two different kinds of heating systems for a 3 bedroom housing unit are given in the table below:

Type of System	Installation Cost	Operation Cost/Year
Electric	\$5,000	\$1,100
Solar	\$30,000	\$150

After how many years of operation will the total costs of solar heating and electric heating be the same?

- (A) Less than 15 years
(B) Between 15 and 20 years
(C) Between 20 and 25 years
(D) Between 25 and 30 years
(E) More than 30 years
9. (***) A student made a map of their school. The map scale was such that two inches on the map represented 65 feet on the ground. The school's football field that is 300 feet long. Determine the length of the football field as represented on the map. Round your answer to 2 decimal places if needed.
- (A) 119.77 inches
(B) 9.23 feet
(C) 9.23 inches
(D) 3.08 inches
(E) 3.08 feet

10. Determine the rule that defines the piecewise-defined function graphed below.



$$(A) \quad f(x) = \begin{cases} x+1 & 0 \leq x \leq 3 \\ \frac{1}{2}x & 3 < x \leq 5 \end{cases}$$

$$(B) \quad f(x) = \begin{cases} x+1 & 0 \leq x \leq 3 \\ \frac{1}{2}x + \frac{1}{2} & 3 < x \leq 5 \end{cases}$$

$$(C) \quad f(x) = \begin{cases} x+1 & 0 \leq x \leq 3 \\ \frac{1}{2}x - \frac{1}{2} & 3 < x \leq 5 \end{cases}$$

$$(D) \quad f(x) = \begin{cases} x+1 & 0 \leq x \leq 3 \\ \frac{1}{2}x + 2 & 3 < x \leq 5 \end{cases}$$

Use the following piecewise function to answer questions 11 and 12.

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

11. Determine the y -intercept for the piecewise function.

- (A) (0, 4)
- (B) (0, 100)
- (C) (0, -5)
- (D) (0, 4), (0, 100), (0, -5)
- (E) (0, 99)

12. (***) Determine the range for the piecewise function.

- (A) $(-\infty, 3)$
- (B) $[3, \infty)$
- (C) $(-3, \infty)$
- (D) $(-\infty, -3)$
- (E) $[-3, \infty)$

13. (***) If $(2, -5)$ is a point on the graph of $y = r(x)$, which one of the following points MUST be on the graph of $y = \frac{1}{3}r(x+1)$?

- (A) $\left(\frac{2}{3}, -4\right)$
- (B) $(1, -5)$
- (C) $\left(3, -\frac{5}{3}\right)$
- (D) $\left(1, -\frac{5}{3}\right)$
- (E) $\left(\frac{1}{3}, -5\right)$

14. (***) For the function $y = f(x)$, the domain is $[-6, 8]$ and the range is $[-4, 10]$. What are the domain and range for the function $y = f(2x) - 5$?

(A) Domain: $[-12, 16]$

Range: $[-9, 5]$

(B) Domain: $[-12, 3]$

Range: $[-8, 5]$

(C) Domain: $[-3, 4]$

Range: $[-4, 10]$

(D) Domain: $[-3, 4]$

Range: $[1, 15]$

(E) Domain: $[-3, 4]$

Range: $[-9, 5]$

15. (***) Suppose the point $(-2, 4)$ is on the graph of the function $y = f(x)$. Transformations are performed on the graph of $y = f(x)$ which move the point $(-2, 4)$ to the point $(2, 7)$. Which of the following could be the transformations that were performed to obtain the new graph?

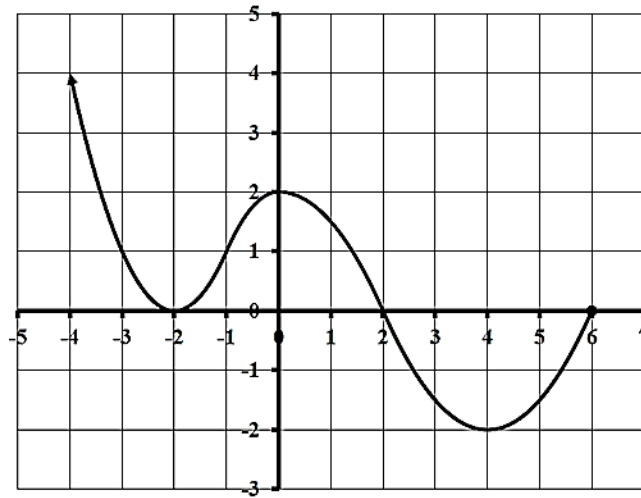
(A) $y = -f(x+3)$

(B) $y = f(-x)+3$

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

(D) $y = -f(x)+3$

Use the following graph to answer questions 16 and 17.



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

- (A) $(-\infty, 0)$ only (B) $(-2, 0)$ only
(C) $(-\infty, -2)$ and $(0, 4)$ only (D) $(0, 4)$ only
(E) $(2, 6)$ only

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

- (A) $(-\infty, -2)$ and $(0, 4)$ only (B) $(4, 6)$ only
(C) $(-2, 0)$ and $(4, 6)$ only (D) $(-\infty, -2)$ and $(0, 2)$ only
(E) $(-2, 0)$ only

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