**Name:** _____     **Date:** _____

1. Which of the following represents the graph of $y = \dfrac{x^2 - 25}{x - 5}$?

A.


B.


C.


D.
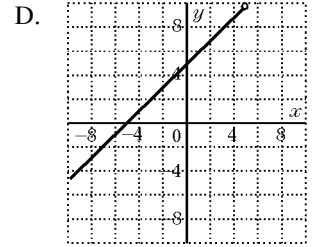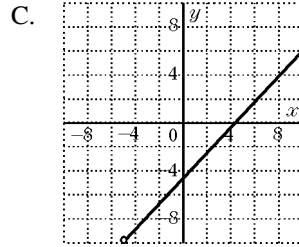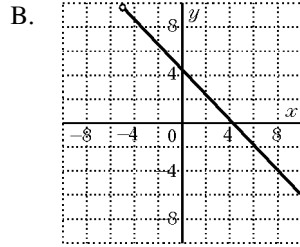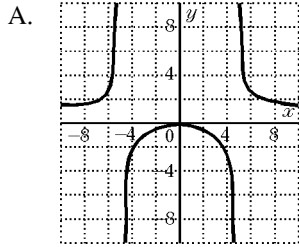

2. Which of the following represents the graph of $y = \dfrac{1}{x^2 - 9}$?

A.


B.


C.


D.
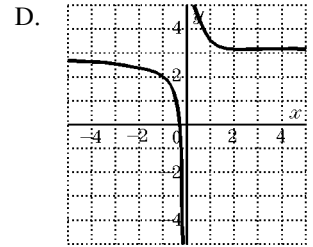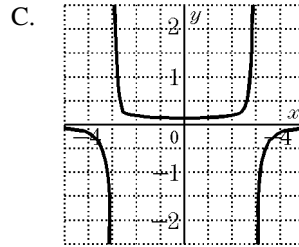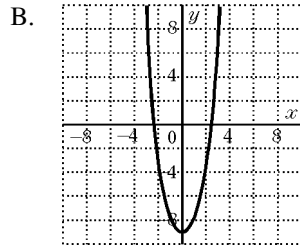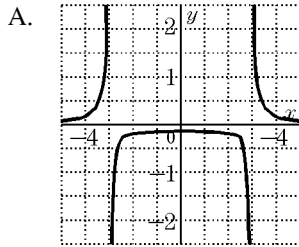

3. Which of the following represents the graph of $y = \dfrac{x^2}{x - 4}$?

A.


B.


C.


D.


4. Which of the following represents the graph of $y = \dfrac{x^2 - 16}{x + 4}$?

A.


B.


C.


D.

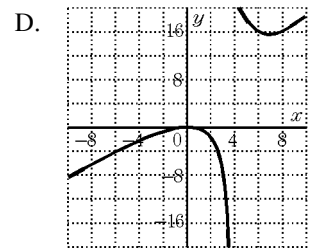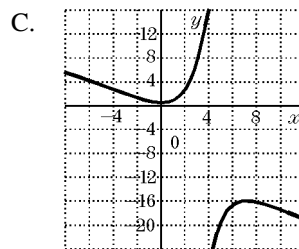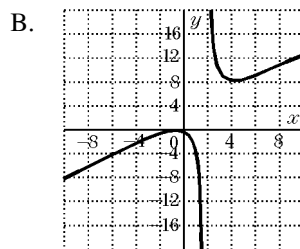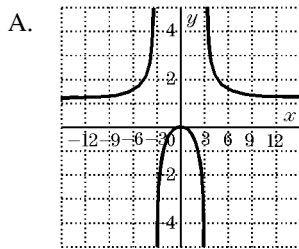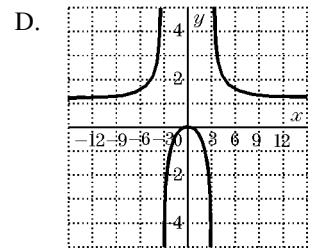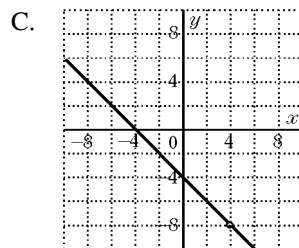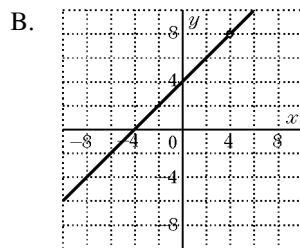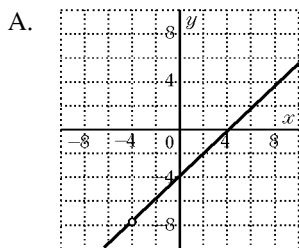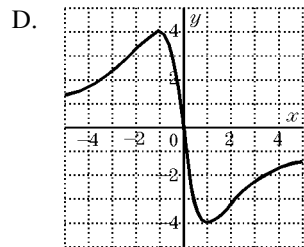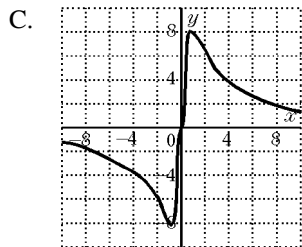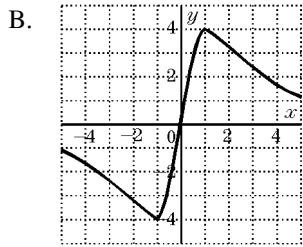5.  Which of the following represents the graph of $y = \dfrac{8x}{x^2 + 1}$?

A.



B.



C.



D.
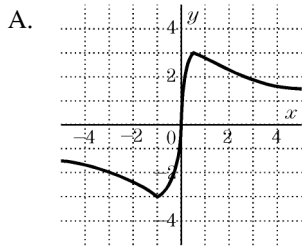


6.  Which of the following is the equation of an asymptote for the function graphed?

A.  $x = -3$        B.  $y = -3$        C.  $x = 3$        D.  $y = 0$
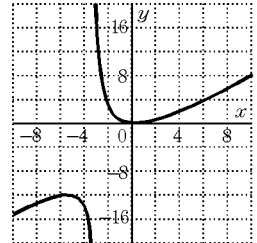


7.  Which of the following is the equation of an asymptote for the function graphed?

A.  $x = -3$        B.  $x = 0$        C.  $x = 3$        D.  $y = 0$
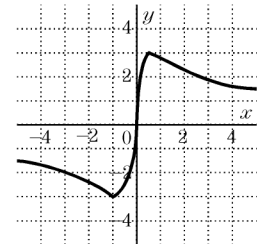


8.  Using the domain $\{-2, -1, 0, 1, 2\}$, which of the following graphs represents this system?

$$f(x) = \begin{cases} x & \text{if } x < 0, \\ 1 & \text{if } x = 0, \\ 3 & \text{if } x > 0, \end{cases}$$

A.



B.



C.



D.
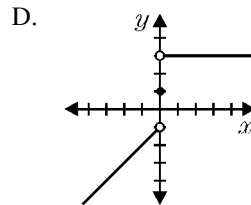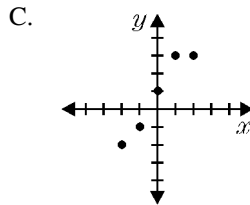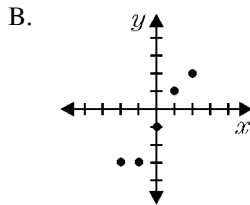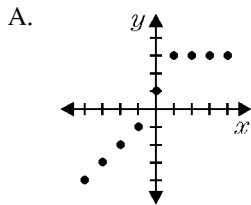


9.  Determine the domain for the following function.

$f(x) = -\sqrt{x - 9} + 5$

A.  $[-5, \infty)$        B.  $[5, \infty)$        C.  $(-\infty, 9]$        D.  $[9, \infty)$

AFM  -  Unit  1

10. Which of the following graphs represents this system?

$$f(x) = \begin{cases} 3 & \text{if } x > 0, \\ 1 & \text{if } x = 0, \\ x - 1 & \text{if } x < 0, \end{cases}$$

A.



B.



C.



D.
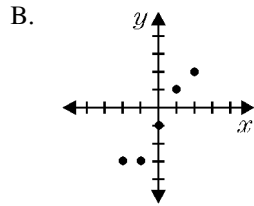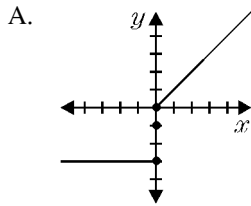


11. Which of the following is a graph of $f(x) = \sqrt{x - 2}$ ?

A.



B.



C.



D.
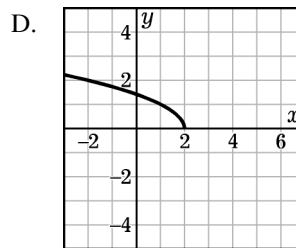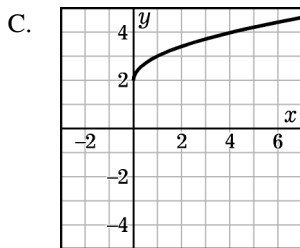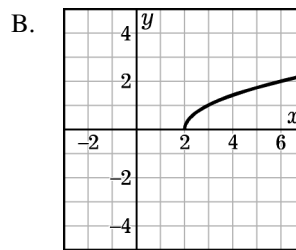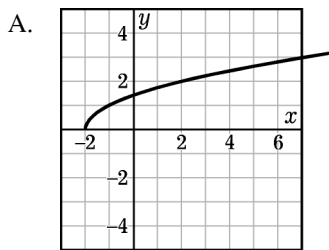


12. The graph of $y = 3 - \sqrt{x - 4}$ appears in which quadrant(s)?

A.   II and III only      B.   I and IV only      C.   I and II only      D.   II and IV only

13. For $y = \dfrac{-2}{\sqrt{x - 2}}$, state the domain.

A.   $\mathbb{R}$          B.   $x \leq 2$          C.   $x > 2$          D.   $y > 2$
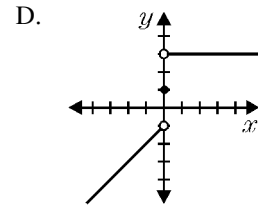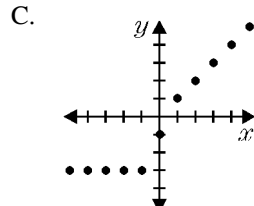
14. Determine a reasonable domain for the rational function

$$f(x) = \frac{(x + 7)}{(x - a)},$$

where $a$ is any real number.

A.   $(-a, \infty)$          B.   $(-7, a)$          C.   $(-\infty, a) \cup (a, \infty)$          D.   $(-\infty, -a) \cup (-a, \infty)$

15. What is the domain of the function shown?

    A.  $-3, -2, -1, 0$                        B.  $-2 < y \le 0$
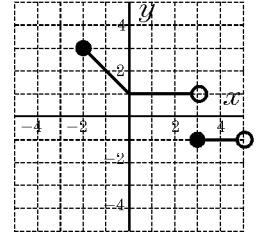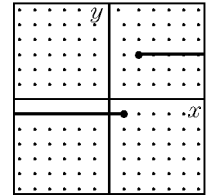
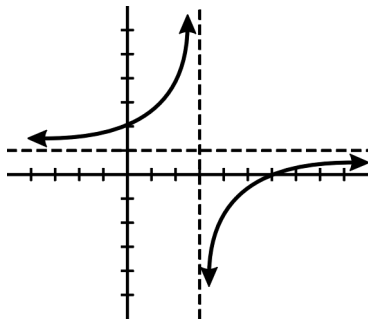    C.  $-2$ and $1 \le y < 3$              D.  $-2 \le x < 5$

16. Which of the following describes the graph shown?

    A.  $f(x) = \begin{cases} 3 & \text{if } x \ge 2, \\ -1 & \text{if } x \le 1 \end{cases}$           B.  $f(x) = \begin{cases} x+3 & \text{if } x \ge 2, \\ x-1 & \text{if } x \le 1 \end{cases}$

    C.  $f(x) = \begin{cases} 3 & \text{if } x \ge 0, \\ -1 & \text{if } x \le 0 \end{cases}$           D.  $f(x) = \begin{cases} 3 & \text{if } x \ge 3, \\ -1 & \text{if } x \le -1 \end{cases}$

17. Which of the following equations could represent the given graph?

    A.  $f(x) = \dfrac{x+3}{x-1}$         B.  $f(x) = \dfrac{x-6}{x-3}$         C.  $f(x) = \dfrac{x-2}{x-3}$         D.  $f(x) = \dfrac{x+6}{x-3}$

18. What is the range of the function

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

when the domain is $\{-4, -2, 1\}$?

    A.  $\{-18, -6, -1\}$       B.  $\{-14, -2, 2\}$       C.  $\{-6, -4, -1\}$       D.  $\{14, 2, -1\}$

19. What is the range of the function

$$f(x) = -|x| - 2$$

when the domain is $\{-2, 0, 1\}$?

    A.  $\{0, -2, -3\}$       B.  $\{-4, -2, -3\}$       C.  $\{0, -2, -1\}$       D.  $\{-4, 0, -1\}$

        AFM - Unit 1

20. If *x* is a *negative real number*, which of the following graphs is the graph of $y = |x| - 3$?

A.



B.



C.



D.