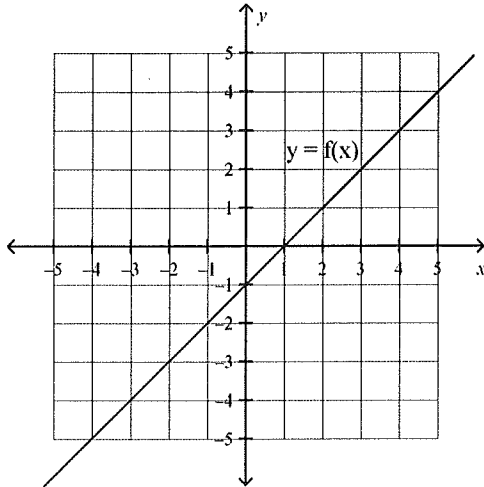


Radicals and Rationals Midterm Review Quiz

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. For the graph of $y = f(x)$ shown below, what are the domain and range of $y = \sqrt{f(x)}$?



- | | |
|-------------------------------------------------------|----------------------------------------------|
| A. domain: $x \geq -1$;
range: $y \in \mathbb{R}$ | C. domain: $x \leq 1$;
range: $y \geq 0$ |
| B. domain: $x \geq 0$;
range: $y \geq 1$ | D. domain: $x \geq 1$;
range: $y \geq 0$ |

_____ 2. The graph of which function below has a vertical asymptote at $x = 5$?

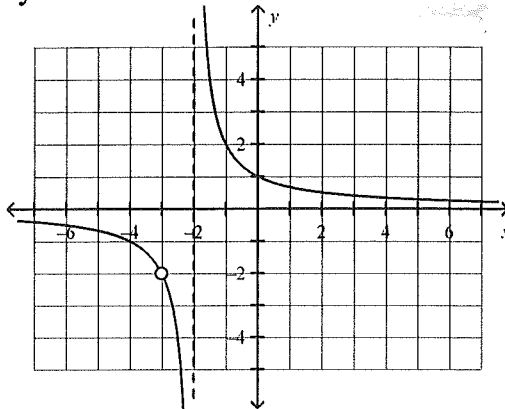
- | | |
|--------------------------|-----------------------------|
| A. $y = \frac{x-5}{x-4}$ | C. $y = \frac{x-5}{x^2-25}$ |
| B. $y = \frac{x^2}{x-5}$ | D. $y = \frac{x^2-25}{x+5}$ |

_____ 3. The graph of which function below has a horizontal asymptote?

- | | |
|--------------------------------|----------------------------|
| A. $y = \frac{x^2+2}{x^2-2}$ | C. $y = \frac{x^2}{x-3}$ |
| B. $y = \frac{x^2-7x+12}{x+7}$ | D. $y = \frac{x^2-4}{x+7}$ |

4. For the graph of this rational function, state the domain and write the equations of any asymptotes and the coordinates of any hole.

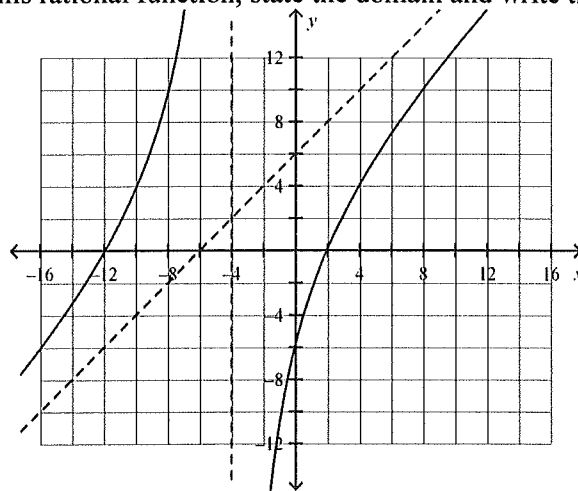
$$y = \frac{2x + 6}{x^2 + 5x + 6}$$



- A. domain: $x \neq -2$ and $x \neq -3$;
vertical asymptotes: $x = -2, x = -3$;
horizontal asymptote: $y = 0$
- B. domain: $x \neq -2$;
vertical asymptote: $x = -2$;
horizontal asymptote: $y = -2$
- C. domain: $x \neq -2$ and $x \neq -3$;
vertical asymptote: $x = -2$;
hole: $(-3, -2)$;
horizontal asymptote: $y = 0$
- D. domain: $x \neq 0$ and $x \neq -3$;
vertical asymptote: $x = 0$;
hole: $(-3, -2)$;
horizontal asymptote: $y = -2$

5. For the graph of this rational function, state the domain and write the equations of any asymptotes.

$$y = \frac{x^2 + 10x - 23}{x + 4}$$



- A. domain: $x \neq 6$;
vertical asymptote: $x = 6$;
oblique asymptote: $y = x - 4$
- B. domain: $x \neq -4$;
vertical asymptote: $x = -4$;
oblique asymptote: $y = x - 4$
- C. domain: $x \neq 6$;
vertical asymptote: $x = 6$;
oblique asymptote: $y = x + 6$
- D. domain: $x \neq -4$;
vertical asymptote: $x = -4$;
oblique asymptote: $y = x + 6$

Name: _____

ID: A

- _____ 6. For the graph of this rational function, identify the equation of any asymptote.

$$y = \frac{6x + 8}{x^2 + 4}$$

- A. The graph has an oblique asymptote at $y = 6x + 8$.
- B. The graph has a vertical asymptote at $x = 2$.
- C. The graph has a horizontal asymptote at $y = 0$.
- D. The graph has no vertical or horizontal asymptotes.

- _____ 7. What is the solution of this radical equation, to the nearest tenth if necessary?

$$\frac{x^2 + x - 5}{x - 4} = \frac{4}{x^2 + 1} - 2$$

- A. $x = 4$ or $x = -1$
- B. $x \doteq -5.2$ or $x \doteq 2.3$
- C. $x \doteq -5.2$ or $x \doteq 2.3$ or $x \doteq \pm 0.5$
- D. $x = 0$

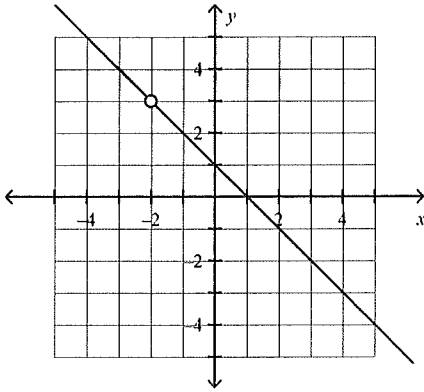
- _____ 8. State the domain of this function.

$$y = \frac{x^2 + 7x + 10}{-2 - x}$$

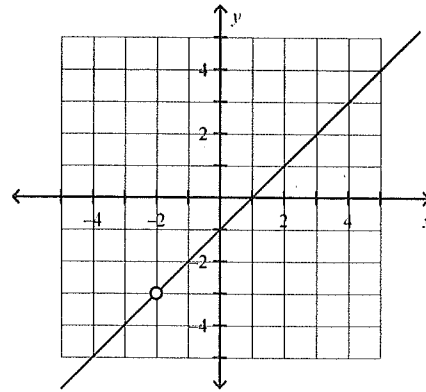
- A. $x \neq \pm 2$
- B. $x \neq -2$
- C. $x \neq -2, x \neq -5$
- D. $x \in \mathbb{R}$

9. Which graph represents the function $y = \frac{(x+2)(-x+1)}{x+2}$?

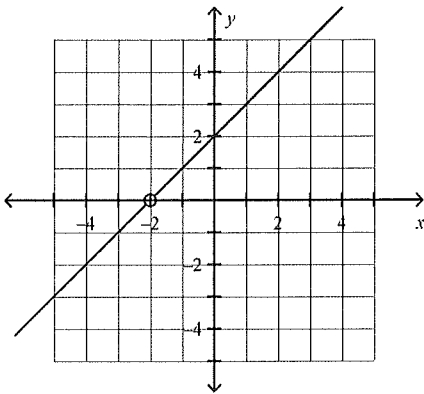
A.



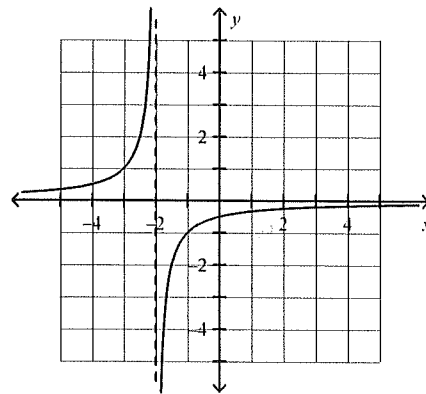
C.



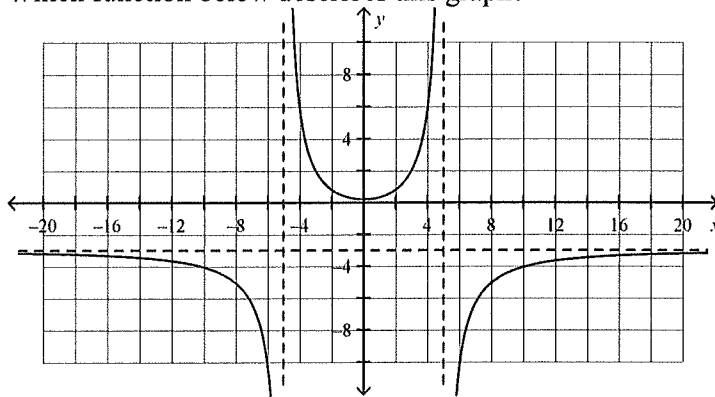
B.



D.



10. Which function below describes this graph?



A. $y = \frac{-3x^2 - 5}{x^2 - 25}$

C. $y = \frac{-3x^2 - 5}{x^2 + 5}$

B. $y = \frac{2x^2 - 5}{x^2 - 25}$

D. $y = \frac{-3x^2 - 5}{x^2}$

Radicals and Rationals Midterm Review Quiz

Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: Easy REF: 2.1 Properties of Radical Functions
 LOC: 12.RF13 TOP: Relations and Functions
 KEY: Procedural Knowledge | Conceptual Understanding
2. ANS: B PTS: 1 DIF: Easy
 REF: 2.2 Math Lab: Graphing Rational Functions LOC: 12.RF14
 TOP: Relations and Functions KEY: Conceptual Understanding
3. ANS: A PTS: 1 DIF: Easy
 REF: 2.2 Math Lab: Graphing Rational Functions LOC: 12.RF14
 TOP: Relations and Functions KEY: Conceptual Understanding
4. ANS: C PTS: 1 DIF: Moderate REF: 2.3 Analyzing Rational Functions
 LOC: 12.RF14 TOP: Relations and Functions KEY: Procedural Knowledge
5. ANS: D PTS: 1 DIF: Easy REF: 2.3 Analyzing Rational Functions
 LOC: 12.RF14 TOP: Relations and Functions KEY: Procedural Knowledge
6. ANS: C PTS: 1 DIF: Moderate REF: 2.3 Analyzing Rational Functions
 LOC: 12.RF14 TOP: Relations and Functions
 KEY: Conceptual Understanding | Procedural Knowledge
7. ANS: C PTS: 1 DIF: Moderate REF: 2.3 Analyzing Rational Functions
 LOC: 12.RF14 TOP: Relations and Functions KEY: Procedural Knowledge
8. ANS: B PTS: 1 DIF: Easy
 REF: 2.4 Sketching Graphs of Rational Functions LOC: 12.RF14
 TOP: Relations and Functions KEY: Conceptual Understanding
9. ANS: A PTS: 1 DIF: Easy
 REF: 2.4 Sketching Graphs of Rational Functions LOC: 12.RF14
 TOP: Radical and Rational Functions KEY: Conceptual Understanding
10. ANS: A PTS: 1 DIF: Moderate
 REF: 2.4 Sketching Graphs of Rational Functions LOC: 12.RF14
 TOP: Relations and Functions KEY: Conceptual Understanding