

**Algebra II Practice Quiz 8.4 - 8.5****Numeric Response**

1. (1 point) How many vertical asymptotes does the graph of  $f(x) = \frac{x^2 + 9}{x^2 - 4x + 4}$  have?

**Multiple Choice**

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

- \_\_\_\_\_ 2. (1 point) Solve the equation  $\frac{2x}{x^2 - 7x - 18} = \frac{6x}{x^2 + x - 2}$ .
- A)  $x = 0$  or  $x = -13$                       C)  $x = 9$  or  $x = 1$   
B)  $x = -2$ ,  $x = 9$ , or  $x = 1$                       D)  $x = 0$  or  $x = 13$
- \_\_\_\_\_ 3. (1 point) Solve the equation  $\frac{7x}{x-5} = \frac{5x+10}{x-5}$ .
- A)  $x = -5$                       C) There is no solution.  
B)  $x = 5$                       D)  $x = -2$
- \_\_\_\_\_ 4. (1 point) Using  $f(x) = \frac{1}{x}$  as the parent function, describe the transformation shown in the function  $g(x) = \frac{1}{x} - 1$ .
- A) Translate  $f(x)$  down 1 unit.  
B) Translate  $f(x)$  right 1 unit.  
C) Translate  $f(x)$  up 1 unit.  
D) Translate  $f(x)$  left 1 unit.
- \_\_\_\_\_ 5. (1 point) Identify holes in the graph of  $f(x) = \frac{x^2 + 8x + 15}{x + 3}$ .
- A) There is a hole in the graph at  $x = 3$ .  
B) There are no holes in the graph.  
C) There is a hole in the graph at  $x = -5$ .  
D) There is a hole in the graph at  $x = -3$ .

- \_\_\_\_\_ 6. (1 point) Identify the asymptotes, domain, and range of the function  $g(x) = \frac{1}{x-7} - 3$ .
- |                                                                                                                          |                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| A) Vertical asymptote: $x = 7$<br>Domain: $\{x x \neq 7\}$<br>Horizontal asymptote: $y = -3$<br>Range: $\{y y \neq -3\}$ | C) Vertical asymptote: $x = -7$<br>Domain: $\{x x \neq -7\}$<br>Horizontal asymptote: $y = 3$<br>Range: $\{y y \neq 3\}$   |
| B) Vertical asymptote: $x = 7$<br>Domain: $\{x x \neq 7\}$<br>Horizontal asymptote: $y = 3$<br>Range: $\{y y \neq 3\}$   | D) Vertical asymptote: $x = -7$<br>Domain: $\{x x \neq -7\}$<br>Horizontal asymptote: $y = -3$<br>Range: $\{y y \neq -3\}$ |
- \_\_\_\_\_ 7. (1 point) Write the expression  $625^{\frac{3}{4}}$  in radical form, and simplify. Round to the nearest whole number if necessary.
- |                                         |                              |
|-----------------------------------------|------------------------------|
| A) $\frac{625^3}{625^4}; \frac{1}{625}$ | C) $(\sqrt[3]{625})^4; 5344$ |
| B) $(\sqrt[4]{625})^3; 125$             | D) $\sqrt[3]{625}; 125$      |
- \_\_\_\_\_ 8. (1 point) Solve the equation  $x + 7 = -\frac{10}{x}$ .
- |             |                         |
|-------------|-------------------------|
| A) $x = -2$ | C) $x = -5$ or $x = -2$ |
| B) $x = -5$ | D) $x = 5$ or $x = 2$   |
- \_\_\_\_\_ 9. (1 point) The surface area  $S$  of a cube with volume  $V$  is  $S = 6V^{\frac{2}{3}}$ . What effect does increasing the volume of a cube by a factor of 8 have on the surface area?
- |                                                                  |
|------------------------------------------------------------------|
| A) The surface area increases by a factor of 8.                  |
| B) The surface area increases by a factor of $8^{\frac{1}{3}}$ . |
| C) The surface area increases by a factor of $8^{\frac{2}{3}}$ . |
| D) The surface area increases by a factor of $8^2$ .             |
- \_\_\_\_\_ 10. (1 point) Identify the zeros and asymptotes of  $f(x) = \frac{2x^2 - 18}{x^2 - 16}$ .
- |                                                                                                 |                                                                                                 |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| A) Zeros: $-3$ and $3$<br>Vertical asymptotes: $x = -4, x = 4$<br>Horizontal asymptote: $y = 1$ | C) Zeros: $-4$ and $4$<br>Vertical asymptotes: $x = -3, x = 3$<br>Horizontal asymptote: $y = 2$ |
| B) Zeros: $-3$ and $3$<br>Vertical asymptotes: $x = -4, x = 4$<br>Horizontal asymptote: $y = 2$ | D) Zeros: $-4$ and $4$<br>Vertical asymptotes: $x = -3, x = 3$<br>Horizontal asymptote: $y = 1$ |

- \_\_\_\_\_ 11. (1 point) Zelon Pharmaceuticals maintains a courier plane to transport company executives back and forth between the company headquarters and the main manufacturing plant 250 miles away. Today the pilot flew from headquarters to the plant, picked up the Chief of Operations, and returned to headquarters. On the first leg of the trip, the pilot flew against a headwind averaging 10 miles per hour. On the return leg, the average tailwind was 30 miles per hour. If the pilot spent a total of four hours in the air, what would the average speed of the courier plane be with no wind? Round your answer to the nearest mile per hour.
- A) 118 mph  
B) 121 mph  
C) 125 mph  
D) Cannot determine. To determine the average speed, you need the time it took for each leg of the trip, not the total time.
- \_\_\_\_\_ 12. (1 point) Simplify the expression  $(27)^{\frac{1}{3}} \cdot (27)^{\frac{2}{3}}$ .
- A) 9  
B) 27  
C) 729  
D) 3
- \_\_\_\_\_ 13. (1 point) Jeremy and Ahmed are painting a wall. Working alone, Jeremy can paint  $\frac{1}{4}$  of the wall in 1 hour. Working together, Jeremy and Ahmed can paint the entire wall in 35 minutes. How long would it take Ahmed to paint the entire the wall by himself?
- A) 20 minutes  
B) 41 minutes  
C) 3 hours  
D) 4 hours
- \_\_\_\_\_ 14. (1 point) Identify the zeros and vertical asymptotes of  $g(x) = \frac{x^2 - 4x - 5}{x + 2}$ .
- A) Zeros at -1 and 5.  
Vertical asymptote:  $x = -2$   
C) Zeros at -1 and 5.  
Vertical asymptote:  $x = 2$
- B) Zeros at 1 and -5.  
Vertical asymptote:  $x = 2$   
D) Zeros at 1 and -5.  
Vertical asymptote:  $x = -2$
- \_\_\_\_\_ 15. (1 point) Write the expression  $\sqrt[11]{11^2}$  by using rational exponents.
- A)  $11^{\frac{11}{2}}$   
B)  $11^{-9}$   
C)  $11^9$   
D)  $11^{\frac{2}{11}}$

Name: \_\_\_\_\_

ID: A

\_\_\_\_\_ 16. (1 point) Identify the zeros and vertical asymptotes of  $g(x) = \frac{x^2 + 6x + 5}{x + 2}$ .

A) Zeros at  $-1$  and  $-5$ .

Vertical asymptote:  $x = -2$

C) Zeros at  $1$  and  $5$ .

Vertical asymptote:  $x = 2$

B) Zeros at  $-1$  and  $-5$ .

Vertical asymptote:  $x = 2$

D) Zeros at  $1$  and  $5$ .

Vertical asymptote:  $x = -2$

## Algebra II Practice Quiz 8.4 - 8.5

### Answer Section

#### NUMERIC RESPONSE

1. ANS: 1

PTS: 1

#### MULTIPLE CHOICE

2. ANS: D PTS: 1

3. ANS: C PTS: 1 REF: Page 601

4. ANS: A PTS: 1 REF: Page 592

5. ANS: D PTS: 1 REF: Page 596

6. ANS: A PTS: 1 REF: Page 593

7. ANS: B PTS: 1 REF: Page 612

8. ANS: C PTS: 1 REF: Page 600

9. ANS: C PTS: 1

10. ANS: B PTS: 1 REF: Page 595

11. ANS: A PTS: 1 REF: Page 602

12. ANS: B PTS: 1 REF: Page 613

13. ANS: B PTS: 1 REF: Page 603

14. ANS: A PTS: 1 REF: Page 594

15. ANS: D PTS: 1 REF: Page 612

16. ANS: A PTS: 1 REF: Page 594