

Brett Robbins Academic Consulting

Math 30-1 Practice Test

Radical Functions

25 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

The domain and range of the function $y = \sqrt{x-4} + 2$ are

A) Domain : $x \geq 4$

Range : $y \geq 2$

B) Domain : $x \geq 2$

Range : $y \geq 4$

C) Domain : $x \geq -4$

Range : $y \geq 2$

D) Domain : $x \geq 4$

Range : $y \geq 0$

Question 2

The starting point (endpoint) of the graph of $y = -2\sqrt{x+3} - 5$ is

A) $(3, -5)$

B) $(-3, -5)$

C) $(-3, 5)$

D) $(3, 5)$

Question 3

The solution to the equation $\sqrt{x+7} = 4$ is

A) 3

B) 23

C) 9

D) 11

Question 4

The graph of $y = \sqrt{x - 5} + 1$ is the graph of $y = \sqrt{x}$ translated

- A) 5 units to the right and 1 unit up
- B) 5 units to the left and 1 unit up
- C) 5 units to the right and 1 unit down
- D) 5 units to the left and 1 unit down

Question 5

The solution to the equation $\sqrt{3x + 1} = 5$ is

Question 6

The graph of $y = f(x)$, where $f(x) = x - 3$, is transformed into the graph of $y = \sqrt{f(x)}$. The invariant points of this transformation occur at the x -values

- | | |
|------------|------------------|
| A) 3 and 4 | B) 0 and 1 |
| C) 3 only | D) -3 and -4 |

Question 7

The solution to the equation $\sqrt{2x - 1} = x - 2$ is

- A) $x = 1$ and $x = 5$
- B) $x = 5$
- C) $x = 1$
- D) No solution

Question 8

The domain of the function $y = \sqrt{6 - 3x}$ is

A) $x \geq -2$

B) $x \geq 2$

C) $x \leq 2$

D) $x \leq -2$

Question 9

The solution to the equation $\sqrt{x+6} = \sqrt{3x-2}$ is

A) 2

B) -4

C) 6

D) 4

Question 10

The equation $\sqrt{5x-4} = x$ has two solutions.

The smaller of the two solutions is

Question 11

The domain of the function $y = \sqrt{x^2 - x - 6}$ is

A) $x \leq -2$ or $x \geq 3$

B) $-2 \leq x \leq 3$

C) $x \geq 3$

D) All real numbers

Question 12

The graph of $y = f(x)$, where $f(x) = (x - 1)(x - 4)$, is transformed into the graph of $y = \sqrt{f(x)}$. The number of invariant points of this transformation is

- A) 2
- B) 6
- C) 4
- D) 3

Question 13

The solution to the equation $\sqrt{x + 4} + \sqrt{x - 1} = 5$ is

- A) 3
- B) 12
- C) 5
- D) 20

Question 14

The solution to the equation $\sqrt{x + 3} = x - 3$ is

- A) $x = 1$ and $x = 6$
- B) $x = 6$
- C) $x = 1$
- D) No solution

Question 15

When solved algebraically, the equation that produces an extraneous root of $x = 2$ is

A) $\sqrt{x-2} = x-4$

B) $\sqrt{2x+3} = x$

C) $\sqrt{x+7} = x+1$

D) $\sqrt{x-1} = x-3$

Question 16

The domain and range of the function $y = -\sqrt{x+1} + 3$ are

A) Domain: $x \geq -1$

Range: $y \geq 3$

B) Domain: $x \geq 1$

Range: $y \leq 3$

C) Domain: $x \geq -1$

Range: $y \leq 3$

D) Domain: $x \geq -1$

Range: $y \geq -3$

Question 17

The graph of $y = 2\sqrt{x-3} + 1$ passes through the point $(12, b)$.

The value of b is

Question 18

The range of the function $y = \sqrt{-x^2 + 2x + 3}$ is

- A) $0 \leq y \leq 2$
B) $y \geq 0$
C) $0 \leq y \leq 4$
D) $y \leq 2$

Question 19

The solution to the equation $\sqrt{x+7} - \sqrt{x} = 1$ is

- A) 16 B) 3
C) 4 D) 9

Question 20

When a student solves the equation $\sqrt{x-1} = x-7$ algebraically, the potential solutions obtained are $x=5$ and $x=10$.

The correct solution set is

- A) $x = 5$ and $x = 10$
B) $x = 10$
C) $x = 5$
D) No solution

Question 21

If the point $(7, 4)$ is on the graph of $y = f(x)$, then a corresponding point on the graph of $y = \sqrt{f(x)}$ is

- A) $(7, 16)$
B) $(49, 2)$
C) $(\sqrt{7}, 4)$
D) $(7, 2)$

Question 22

The solution to the equation $\sqrt{x+2} = x$ is

Question 23

The solution to the equation $\sqrt{4x+1} = 5$ is

Question 24

The graph of $y=f(x)$, where $f(x)=(x-2)^2$, is transformed into the graph of $y=\sqrt{f(x)}$. The number of invariant points of this transformation is

Question 25

When the equation $\sqrt{x-3} = x-5$ is solved algebraically, one of the potential solutions is extraneous.

The value of the extraneous root is

Answer Key

- | | | |
|------|-------|-------|
| 1. A | 10. 1 | 19. D |
| 2. B | 11. A | 20. B |
| 3. C | 12. C | 21. D |
| 4. A | 13. C | 22. 2 |
| 5. 8 | 14. B | 23. 6 |
| 6. A | 15. D | 24. 3 |
| 7. B | 16. C | 25. 4 |
| 8. C | 17. 7 | |
| 9. D | 18. A | |

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