

SAT Desmos Worksheet

Name: _____ Date: _____

Use the Desmos graphing calculator. Circle one answer for each question.

1. In Desmos, graph $y = 2x + 1$ and $y = 9$. What is the x-coordinate of their intersection?

- A. 2
- B. 3
- C. 4
- D. 9

2. Graph $y = x^2 - 5x + 6$. What is the larger x-intercept?

- A. 1
- B. 2
- C. 3
- D. 6

3. Graph $y = (x - 4)^2 + 2$. What is the minimum y-value?

- A. 2
- B. 4
- C. 6
- D. 18

4. Graph $y = -x + 7$ and $y = 2x - 2$. What is the y -coordinate of the intersection?

- A. 2
- B. 3
- C. 4
- D. 5

5. Graph $y = 2^x$ and $y = 8$. What is the x -coordinate of the intersection?

- A. 2
- B. 3
- C. 4
- D. 8

6. Graph $y = -x^2 + 6x + 1$. What is its maximum y -value?

- A. 3
- B. 6
- C. 9
- D. 10

7. Graph $y = x^2$ and $y = 2x + 3$. How many intersection points are there?
- A. Zero
 - B. One
 - C. Two
 - D. Three
8. Graph $y = 3(x - 2)^2 - 12$. What is the positive difference between its x -intercepts?
- A. 2
 - B. 4
 - C. 6
 - D. 12
9. Graph $y = \frac{12}{x+1}$ and $y = 3$. What is the x -coordinate of the intersection?
- A. 2
 - B. 3
 - C. 4
 - D. 5

10. Enter $f(x) = 0.5x^2 + 2x - 1$, then evaluate $f(6)$. What value should Desmos display?

- A. 17
- B. 23
- C. 29
- D. 35

11. Graph $y = x^2 - 4x + 4$. How many distinct x -intercepts does it have?

- A. Zero
- B. One
- C. Two
- D. Four

12. Graph $y = 5x + 10$. Its x -intercept is $(-2, 0)$. What does this tell you about the equation $5x + 10 = 0$?

- A. Its solution is -2 .
- B. Its solution is 0 .
- C. Its solution is 2 .
- D. Its solution is 10 .

Answer key

1 C · 2 C · 3 A · 4 C · 5 B · 6 D · 7 C · 8 B · 9 B · 10 C · 11 B · 12 A

1. C: 4

At the intersection, $2x + 1 = 9$. Solving gives $x = 4$; the full point is $(4, 9)$.

2. C: 3

The graph crosses the x -axis where $(x - 2)(x - 3) = 0$. The larger x -coordinate is 3.

3. A: 2

The vertex is $(4, 2)$. The question asks for the output at the minimum, which is 2, rather than the input 4.

4. C: 4

Set $-x + 7 = 2x - 2$ to get $x = 3$. Substitute to find $y = 4$, so the requested coordinate is 4.

5. B: 3

The intersection satisfies $2^x = 8$. Since $2^3 = 8$, its x -coordinate is 3.

6. D: 10

Complete the square to get $y = -(x - 3)^2 + 10$. The vertex is $(3, 10)$, so the maximum is 10.

7. C: Two

Solving $x^2 = 2x + 3$ gives $(x - 3)(x + 1) = 0$. There are two distinct real solutions and therefore two intersections.

8. B: 4

The zeros satisfy $(x - 2)^2 = 4$, giving $x = 0$ and $x = 4$. Their positive difference is 4.

9. B: 3

Set $\frac{12}{x+1} = 3$. Then $x + 1 = 4$, so $x = 3$, which is within the function's domain.

10. C: 29

Substitute 6: $0.5(36) + 12 - 1 = 18 + 12 - 1 = 29$. Function evaluation returns an output, not an intercept.

11. B: One

The expression is $(x - 2)^2$. Its only zero is $x = 2$, where the parabola touches the x -axis rather than crossing at two points.

12. A: Its solution is -2.

An x -intercept has output $y = 0$. Therefore its x -coordinate, -2 , solves the equation obtained by setting the expression equal to zero.