

SAT Practice Questions: Special Cases

Question 1:

$$y = x^2 - a$$

In the equation above, a is a positive constant and the graph of the equation in the xy -plane is a parabola. Which of the following is an equivalent form of the equation?

- a) $y = (x - a)(x + a)$
- b) $y = (x + \sqrt{a})(x - \sqrt{a})$
- c) $y = (x + \frac{a}{2})(x - \frac{a}{2})$
- d) $y = (x + a)^2$

Question 2:

Which of the following expressions is equivalent to $16x^4 - 81$?

- a) $(4x^3 - 9)(4x + 9)$
- b) $(2x - 3)(2x + 3)(4x^2 - 9)$
- c) $(2x - 3)(2x + 3)(4x^2 + 9)$
- d) $(2x - 3)^4$

Question 3:

Which of the following is equivalent to $(a + \frac{b}{2})^2$?

- a) $a^2 + \frac{b^2}{2}$
- b) $a^2 + \frac{b^2}{4}$
- c) $a^2 + \frac{ab}{2} + \frac{b^2}{2}$
- d) $a^2 + \frac{ab}{2} + \frac{b^2}{2}$

Question 4:

$$4x^2 - 9 = (px + t)(px - t)$$

In the equation above, p and t are constants. Which of the following could be the value of p ?

- a) 2
- b) 3
- c) 4
- d) 9

Question 5:

If $a^2 + b^2 = z$ and $ab = y$, which of the following is equivalent to $4z + 8y$?

- a) $(a + 2b)^2$
- b) $(2a + 2b)^2$
- c) $(4a + 4b)^2$
- d) $(4a + 8b)^2$

Question 6:

$$9a^4 + 12a^2b^2 + 4b^4$$

Which of the following is equivalent to the expression shown above?

- a) $(3a^2 + 2b^2)^2$
- b) $(3a + 2b)^4$
- c) $(9a^2 + 4b^2)^2$
- d) $(9a + 4b)^4$