

SAT Practice Questions: Special Cases **Key**

Question 1:

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

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

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$a^2 + 2 \cdot a \cdot \frac{b}{2} + \left(\frac{b}{2}\right)^2$$
$$= a^2 + ab + \frac{b^2}{4}$$