

QUADRATICS

- 2005B 16. The quadratic equation $x^2 + mx + n = 0$ has roots that are twice those of $x^2 + px + m = 0$, and none of m , n , and p is zero. What is the value of n/p ?
- (A) 1 (B) 2 (C) 4 (D) 8 (E) 16

- 2015A 16. If $y + 4 = (x - 2)^2$, $x + 4 = (y - 2)^2$, and $x \neq y$, what is the value of $x^2 + y^2$?
- (A) 10 (B) 15 (C) 20 (D) 25 (E) 30

- 2003A 18. What is the sum of the reciprocals of the roots of the equation

$$\frac{2003}{2004}x + 1 + \frac{1}{x} = 0?$$

- (A) $-\frac{2004}{2003}$ (B) -1 (C) $\frac{2003}{2004}$ (D) 1 (E) $\frac{2004}{2003}$

- 2011B 19. What is the product of all the roots of the equation

$$\sqrt{5|x| + 8} = \sqrt{x^2 - 16}.$$

- (A) -64 (B) -24 (C) -9 (D) 24 (E) 576

- 2013B 19. The real numbers c, b, a form an arithmetic sequence with $a \geq b \geq c \geq 0$. The quadratic $ax^2 + bx + c$ has exactly one root. What is this root?

- (A) $-7 - 4\sqrt{3}$ (B) $-2 - \sqrt{3}$ (C) -1 (D) $-2 + \sqrt{3}$ (E) $-7 + 4\sqrt{3}$

- 2007A 20. Suppose that the number a satisfies the equation $4 = a + a^{-1}$. What is the value of $a^4 + a^{-4}$?

- (A) 164 (B) 172 (C) 192 (D) 194 (E) 212

- 2014B 20. For how many integers x is the number $x^4 - 51x^2 + 50$ negative?

- (A) 8 (B) 10 (C) 12 (D) 14 (E) 16