

Name:

Date:

1

Which number is irrational?

- (1)  $\sqrt{9}$  (3) 0.3333  
(2)  $\sqrt{8}$  (4)  $\frac{2}{3}$

2

Rashawn bought a CD that cost \$18.99 and paid \$20.51, including sales tax. What was the rate of the sales tax?

- (1) 5% (3) 3%  
(2) 2% (4) 8%

3

Which expression is equivalent to  $\frac{4}{3+\sqrt{2}}$ ?

- (1)  $\frac{12+4\sqrt{2}}{7}$  (3)  $\frac{12-4\sqrt{2}}{7}$   
(2)  $\frac{12+4\sqrt{2}}{11}$  (4)  $\frac{12-4\sqrt{2}}{11}$

4

The roots of the equation  $ax^2 + 4x = -2$  are real, rational, and equal when  $a$  has a value of

- (1) 1 (3) 3  
(2) 2 (4) 4

5

In simplest form,  $\frac{\frac{1}{x^2} - \frac{1}{y^2}}{\frac{1}{y} + \frac{1}{x}}$  is equal to

- (1)  $\frac{x-y}{xy}$  (3)  $x-y$   
(2)  $\frac{y-x}{xy}$  (4)  $y-x$

6

$$\frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x^2} - \frac{1}{y^2}}$$

The expression  $\frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x^2} - \frac{1}{y^2}}$  is equivalent to

- (1)  $\frac{xy}{y-x}$
- (2)  $\frac{xy}{x-y}$
- (3)  $\frac{y-x}{xy}$
- (4)  $y-x$

7

$$\frac{x^2 - 9x}{45x - 5x^2}$$

Written in simplest form, the expression  $\frac{x^2 - 9x}{45x - 5x^2}$  is equivalent to

- (1)  $\frac{1}{5}$
- (2)  $-\frac{1}{5}$
- (3) 5
- (4) -5

8

The value of  $\sqrt{x^2 - 9}$  is a real and irrational number when  $x$  is equal to

- (1) 5
- (2) 0
- (3) -3
- (4) 4

9

The expression  $i^{100} + i^{101} + i^{102}$  equals

- (1) 1
- (2) -1
- (3)  $-i$
- (4)  $i$

10

Which equation has roots whose sum is 3 and whose product is -4?

- (1)  $x^2 + 3x - 4 = 0$
- (2)  $x^2 - 3x - 4 = 0$
- (3)  $x^2 + 4x - 3 = 0$
- (4)  $x^2 - 4x + 3 = 0$

11

Express the following rational expression in simplest form:

$$\frac{9 - x^2}{10x^2 - 28x - 6}$$

12

Express in simplest form:  $\frac{1}{x} + \frac{1}{x+3}$