GRE Quant Foundation Assessment Test (Algebra)

Total points 24/36

This is an assessment designed to assess your GRE Quant Foundation knowledge. None of the questions are tricky. None of the questions are puzzles. They solely test knowledge.

Calculators: You can use a calculator but it has to be one of those crappy ones like the one on your phone when you turn it vertically. Or the one on the ETS website in the PowerPrep exams. Or https://www.gregmat.com/tools/calculator

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✗ In the expression below, the variable x can take any real value. 0/1

$$\frac{x^2+7}{x^2-5}$$

- (●) True ✗
- ( ) False

Correct answer

- (●) False

✓ In the expression below, the variable x can take any real value. 1/1

$$\frac{x^3 + 3x}{x^4 + 1}$$

- (●) True ✓
- ( ) False

✓ **After simplification**, how many terms does the algebraic expression below have? 1/1

$$3x^2 + 4x + 2x^2 - 5x + 1$$

3 ✓

✓ What is the degree of an algebraic expression that contains only a constant? 1/1

- (●) 0 ✓
- ( ) 1

✗ What is the degree of the polynomial below? 0/1

$$x^4 + x^3 + xy^4$$

4 ✗

Correct answers

5

five

✓ The algebraic identity below can be written in what other form? 1/1

$$x^2 - y^2$$

(x+y)(x-y) ✓

✓ The algebraic identity below can be written in what other form? 1/1

$$a^2 - 2ab + b^2$$

(a-b)^2 ✓

✓ A linear equation contains at most two variables. 1/1

- ○ True
- ◉ False ✓

✓ What is the degree of a quadratic equation? 1/1

- 1
- (•) 2 ✓
- 3
- 4

✗ 0/1

$$\sqrt{x^2} = x$$

- (•) True ✗
- False

Correct answer

- (•) False

✓ 1/1

$$\sqrt[3]{x^3} = x$$

- (•) True ✓
- False

✓ Using the system of equations below, calculate the **product** of x and y. 1/1

$$3x + 4y = -6$$
$$-2x + 2y = -10$$

-6 ✓

✓ Using the system of equations below, calculate the **sum** of x and y. 1/1

$$3x + 2y = 17$$
$$2x + 3y = 8$$

5 ✓

✗ If we have three non-equivalent linear equations, each containing the same three variables (and no other variables), we can solve for the value of each variable. 0/1

- ○ True
- ◉ False ✗

Correct answer

- ◉ True

✓ What is the formula for the **discriminant** of the quadratic formula? 1/1

$b^2 + 4ac$

Option 1

$a^2 + 4bc$

Option 2

$b^2 - 4ac$

Option 3 ✓

$a^2 - 4bc$

Option 4

✓ If a quadratic equation has only one solution, what is the value of its discriminant? 1/1

0 ✓

✓ If we were to factor the quadratic expression below into the form (x+a)(x+b), how would we write the expression? 1/1

$$x^2 + 7x + 10$$

(x+5)(x+2) ✓

✓ If we were to factor the quadratic expression below into the form (cx+a)(x+b), where a, b, and c are all integers not equal to 1, how would we write the expression? 1/1

$$2x^2 - 6x - 8$$

(2x+2)(x-4) ✓

✓ If we wanted to **complete the square** of the quadratic equation below, what number should we add to both sides of the equation? 1/1

$$x^2 - 6x = -5$$

9 ✓

✓ The two equations below are equivalent. 1/1

$$x^2 + 10x = -2$$
$$(x+5)^2 - 23 = 0$$

(●) True ✓

( ) False

✓ How many solutions satisfy the equation below? 1/1

$$\left|x^2 + 5x\right| = 4$$

4 ✓

✗ Given the inequality below, which of the following is true? 0/1

Select all that apply.

$x^3 < x$

$x < 1$

Option 1

$-1 < x < 1$

Option 2

$-1 < x < 0$

Option 3 ✗

$x < -1$

Option 4

$0 < x < 1$

Option 5

Correct answer

Option 4

Option 5

✓ The two inequalities below are equivalent. 1/1

$$-3x < 12$$
$$x < -4$$

True

False ✓

✓ If f(x) = f(x+2) and f(4) = 2, what does f(16) equal? 1/1

2 ✓

✓ The domain and range of the function below are equal. 1/1

$$f(x) = \sqrt{x}$$

True ✓

False

✗ The domain and range of the function below are equal. 0/1

$$f(x) = x^2$$

- ○ True
- ○ False

✗ If the below is true, what does f(81) equal? 0/1

$$f(3x) = (f(x))^2$$
$$f(3) = 2$$

_____ ✗

Correct answer

256

✗ Which of the following correctly represents an **even** function? 0/1

$f(-x) = f(x)$

Option 1

$f(-x) = -f(x)$

Option 2 ✗

$f(x) = f(x+2)$

Option 3

$f(x) = f(x) + 2$

Option 4

Correct answer

Option 1

✗ Which of the following functions is/are odd? 0/1

Select all that apply.

$f(x) = x$

☑ Option 1 ✓

$f(x) = x^5 + x$

☐ Option 2

$f(x) = x^3 + 11$

☐ Option 3

Correct answer

☑ Option 1

☑ Option 2

✓ John is currently three times as old as Alice (in years). In 12 years, Alice will be half as old as John. How old is John (in years) right now? 1/1

36 ✓

✓ Bob invested $50,000 in an account earning simple annual interest of x%, which pays out in equal monthly installments. If he received $500 after the first month, what is x? 1/1

12 ✓

✗ A bank account earns 8% annual interest, compounding quarterly. If John invests $100 in this account for three years, the amount of money the bank account has can be represented by the equation below. What is r + n? 0/1

$$100(1 + r/100)^n$$

20 ✗

Correct answers

Correct Answer

14

✗ Solution A contains 30% substance Z by volume and solution B contains 45% substance Z by volume. When a certain amount of solution A is mixed with a certain amount of solution B, the combined solution contains 41% substance Z. In what ratio were the two solutions mixed (A to B)? 0/1

4/9 ✗

Correct answers

4:11

4/11

4 / 11

4 to 11

✓ Which of the following scenarios results in a LONGER commute time? 1/1

Scenario 1: Sarah drives to her work at a constant speed of 30 mph and drives home from work at a constant speed of 40 mph.

Scenario 2: Sarah drives to her work and back to her home at a constant speed of 35 mph both ways.

- (●) Scenario 1 results in a longer commute. ✓
- ( ) Scenario 2 results in a longer commute.
- ( ) The two scenarios result in an equivalent commute time.

✓ Train A is traveling directly east from town R to town T at a constant speed of 74 mph. Train B is traveling directly west from town T to town R at a constant speed of 90 mph. If the two towns are 300 miles apart and if both trains leave at precisely the same time, approximately how many **minutes** will pass before they meet? 1/1

Round your answer to the nearest integer.

110 ✓

✗ Ahmed and Sanjeet are running on a 2-mile circular track, running at constant speeds of 8 mph and 5 mph respectively, in the same direction. If Ahmed is currently 1 mile behind Sanjeet, how many minutes will pass before Ahmed passes Sanjeet **twice**? 0/1

100 ✗

Correct answer

60