Training test

Started	Wednesday, March 11 2020, 5:07 pm
State	Completed
terminated	Wednesday, March 11 2020, 5:47 pm
The time spent on	40 min
Score	1050.00 / 1800.00
Rating	**10.50** on a maximum of 18.00 (**58** %)

Question 1

Wrong answer

Score -25.00 out of 100.00

Only one of the following statements is correct; identify which one.

- (A) Two rectangular trapezoids with the same perimeter are necessarily similar
- (B) Two rhombuses with the same area are necessarily similar ✗
- (C) Two rectangles with the same area are necessarily similar
- (D) Two isosceles triangles with an congruent base angle are necessarily similar
- (E) Two scalene triangles with the same perimeter are necessarily similar

The correct answer is: Two isosceles triangles with an congruent base angle are necessarily similar

Question 2

Correct answer

Score 100.00 out of 100.00

A common divisor of monomials $8a^3x^6$, $4a^2x^6y$, $a^4bx^3y^2$and '

- (TO) x^6y^2
- (B) a^2bx^6y
- (C) a^2x^3 ✓
- (D) $a^3x^6y^2$
- (IS) axy

The correct answer is: a^2x^3

Question 3

Correct answer

Score 100.00 out of 100.00

The sum of the ages of two brothers is now 20 years old. In four years the age of the elder will be equal to three times its current age minus double the current age of the minor. How old are the two brothers?

- (A) are twins
- (B) 15 and 5 years old
- (C) 12 and 8 years old
- (D) 13 and 7 years old
- (E) 11 and 9 years old ✓

The correct answer is: 11 and 9 years old

Question 4

Wrong answer

Score -25.00 out of 100.00

The equation $\log_2(x+5)^4 = 4$

- (A) has the only solution $x = -3$ ✗
- (B) has no real solutions
- (C) has the only solution $x = 2 - \log_2 5$
- (D) has the solutions $x = -3 \text{and} x = -7$
- (E) has the only solution $x = -7$

The correct answer is: it has the solutions $x = -3 \text{and} x = -7$

Question 5

Wrong answer

Score -25.00 out of 100.00

A company has pieces of fabric in three different colors available to prepare jackets. Each of the jackets must be made up of three different colors: one for the interior, one for the exterior and one for the collar. How many types of jackets can be prepared?

- (TO) $2! \cdot 3!$
- (B) three
- (Are you there
- (D) 3^3 ✗
- (E) nine

The correct answer is: you are

Question 6

Correct answer

Score 100.00 out of 100.00

Which of these equations represents a straight line parallel to the straight line passing through the points $(0, -1)$ and $(2, 3)$?

- (TO) $2x + y = 0$
- (B) $x - 3y - 2 = 0$
- (C) $2x + y - 1 = 0$
- (D) $2x - y - 2 = 0$ ✓
- (IS) $x - 2y + 3 = 0$

The correct answer is: $2x - y - 2 = 0$

Question 7

Correct answer

Score 100.00 out of 100.00

For $x > 0$, the expression

$$5^{2\log_5 x}$$

It's equal to:

- (TO) $5x^2$
- (B) x^2 ✓
- (C) $5^2 x$
- (D) $5^2 + x$
- (IS) $2x$

The correct answer is: x^2

Question 8

Correct answer

Score 100.00 out of 100.00

Simplifying the expression $\left[\left(\frac{1}{3}a^3b^2\right)^2 : \left(\frac{1}{9}a^2b\right)\right]^3$, where a and b are two non-zero real numbers, we obtain

- (TO) $\frac{1}{81}a^9b^{12}$
- (B) a^9b^{12}
- (C) $9a^{12}b^9$
- (D) $a^{12}b^9$ ✓
- (IS) $\frac{1}{9}a^{12}b^9$

The correct answer is: $a^{12}b^9$

Question 9

Wrong answer

Score -25.00 out of 100.00

The set of solutions of the inequality $ax > -2$, with a non-zero real number, is

- (A) the half-line $x < -2/a$ or the half-line $x > -2/a$
- (B) the empty set
- (C) the whole real axis
- (D) the half-line $x > -2/a$ ✗
- (E) the half-line $x < -2/a$

The correct answer is: the half-straight $x < -2/a$ or the half-straight $x > -2/a$

Question 10

Correct answer

Score 100.00 out of 100.00

The prime factorization of the number $(4^4 - 4^2)^2 3^3$ is:

- (TO) $2^8 3^5 5^2$ ✓
- (B) $2^4 3^5 5^2$
- (C) $2^6 3^5 5^2$
- (D) $2^8 3^4 5$
- (IS) $2^8 3^5 5^3$

The correct answer is: $2^8 3^5 5^2$

Question 11

Correct answer

Score 100.00 out of 100.00

Consider two spheres in space both of radius 1 and of centers P_1 and P_2 respectively. If the distance between P_1 and P_2 is 3, then the intersection of the spheres is:

- (A) a point
- (B) a hyperbola
- (C) the empty set ✓
- (D) an ellipse with different axle shafts
- (E) a circumference

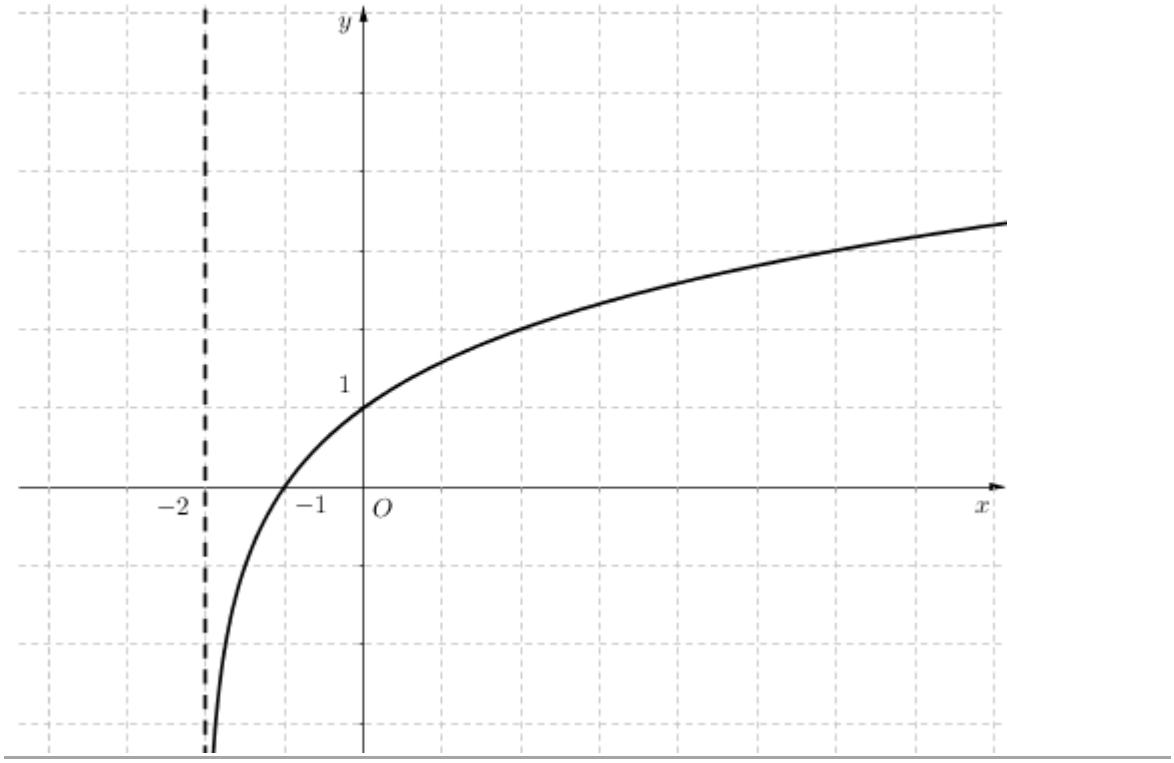
The correct answer is: the empty set

Question 12

Correct answer

Score 100.00 out of 100.00

The figure shows the graph of the function



- (TO) $y = 2 \cdot \log_4 (x - 2)$
- (B) $y = 2 \cdot \log_4 (x + 2)$ ✓
- (C) $y = 2 \cdot \log_2 (x + 2)$
- (D) $y = \log_4 (x - 2)$
- (IS) $y = \log_4 (x + 2)$

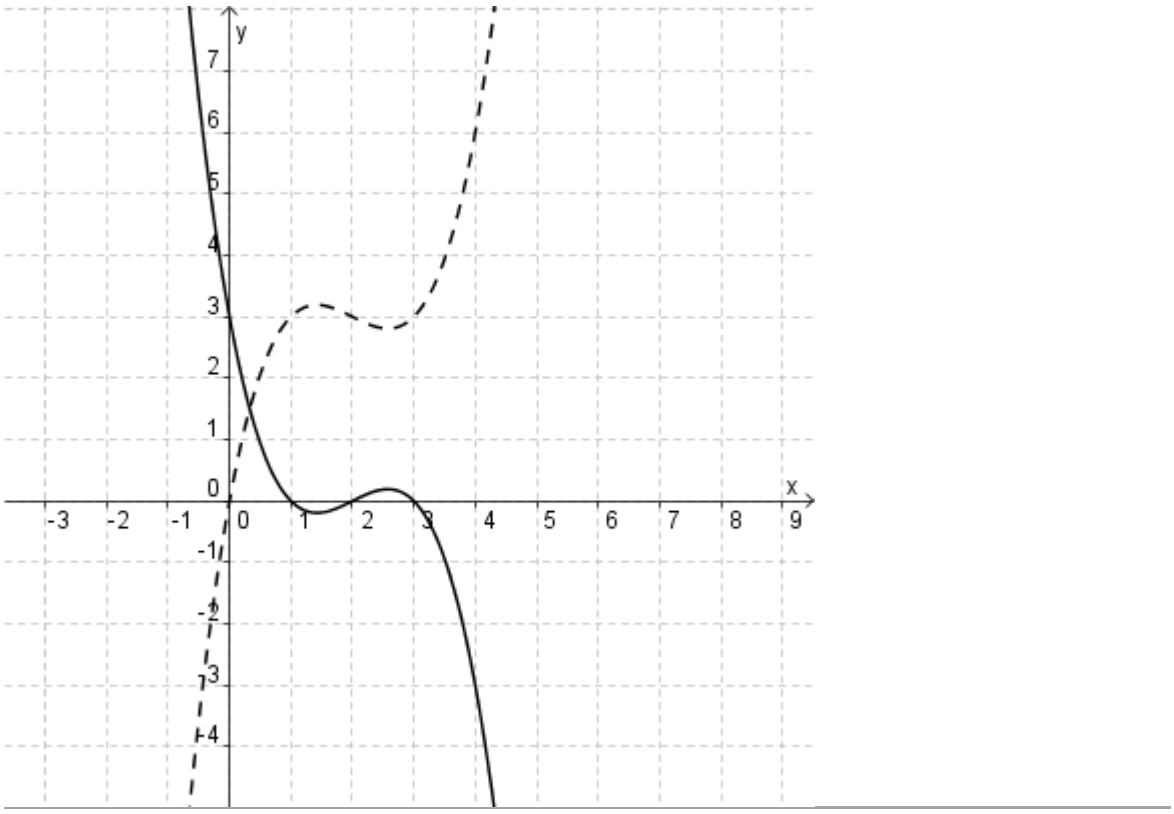
The correct answer is: $y = 2 \cdot \log_4 (x + 2)$

Question 13

Wrong answer

Score -25.00 out of 100.00

The figure shows the graph of $y = f(x)$ the continuous stroke function . The dotted curve is instead the graph of the function:



- (TO) $y = -3f(x)$
- (B) $y = 3 - f(x)$
- (C) $y = -f(x)$
- (D) $y = -f(x+3)$ ✗
- (IS) $y = -3 - f(x)$

The correct answer is: $y = 3 - f(x)$

Question 14

Wrong answer

Score -25.00 out of 100.00

Equation circles are given

$$x^2 + y^2 - 2x - 4y - 4 = 0, \qquad x^2 + y^2 - 4x - 2y + 4 = 0.$$

We can say that the two circumferences

- (A) intersect at four distinct points
- (B) intersect at two distinct points
- (C) are tangent ✗
- (D) are separated and the second is internal to the first
- (E) are disjointed and the former is internal to the latter

The correct answer is: they are disjointed and the second is internal to the first

Question 15

Correct answer

Score 100.00 out of 100.00

In a restaurant there are 24 square tables with 4 seats each, which can be arranged individually or combined to form a 6 or 8-seater table. By forming the same number of 4-seater, 6-seater and 8-seater tables, how many seats are obtained?

- (A) 78
- (B) 84
- (C) 72 ✓
- (D) 68
- (E) 60

The correct answer is: 72

Question 16

Correct answer

Score 100.00 out of 100.00

The expression $\cos^2 \frac{5\pi}{8} - \sin^2 \frac{5\pi}{8}$ is equal to:

- (TO) $\cos \frac{5\pi}{16}$
- (B) $-\frac{\sqrt{2}}{2}$ ✓
- (C) $\left(\frac{\sqrt{2}}{2}\right)^2$
- (D) $\frac{\sqrt{3}}{2}$
- (IS) 1

The correct answer is: $-\frac{\sqrt{2}}{2}$

Question 17

Correct answer

Score 100.00 out of 100.00

Let be x a positive real number. The real number

$$\frac{\sqrt{\sqrt[3]{(x+1)^5}}}{\sqrt[4]{(x+1)^3}}$$

It's equal to

- (TO) $\sqrt[12]{(x+1)}$ ✓
- (B) $\sqrt[4]{(x+1)}$
- (C) $\sqrt[9]{(x+1)^{10}}$
- (D) $(x+1)^{12}$
- (IS) $x+1$

The correct answer is: $\sqrt[12]{(x+1)}$

Question 18

Correct answer

Score 100.00 out of 100.00

The equation $4x^6 - 12x^3 = -9$

- (A) cannot be resolved, because it is too high
- (B) has one and only one real solution ✓
- (C) has six distinct real solutions
- (D) has two (and only two) distinct real solutions
- (E) has three distinct solutions

The correct answer is: it has one and only one real solution