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Question 1
Not yet answered
Marked out of 6.00
v1 (latest)

Simplify the expression: $2\sqrt{108} - 2\sqrt{27} + 12\sqrt{12}$.

Select one:

- a. $150\sqrt{3}$
- b. $18\sqrt{3}$
- c. $42\sqrt{3}$
- d. None of the remaining possibilities is correct.
- e. $30\sqrt{3}$

Question 2
Not yet answered
Marked out of 8.00
v1 (latest)

Find all real solutions of the equation $16^x = 8 \cdot 4^x - 2 \cdot 8^x$.

Select one:

- a. $x = -2,\ 0,\ 1$
- b. The equation has no real solutions.
- c. None of the remaining possibilities is correct.
- d. $x = 0,\ x = 1$
- e. $x = 1$

Question 3

Not yet answered

Marked out of 6.00

v1 (latest)

Due to a leak, the car cooling system has lost 40% of its full capacity of 20 liter of antifreezing mix. The mix contained 20% of fridex and 80% of water. How much fridex and how much water should be poured into the radiator to refill the system with a mix containing 40% fridex and 60% water?

Select one:

- a. The specified concentration cannot be obtained under the conditions specified.
- b. The product of volumes of added fridex and water in liters is 3.36 .
- c. The difference of volumes of added fridex and water in liters is 2 .
- d. If we multiply the volumes of added fridex and water in liters we get 13.44 .
- e. None of the remaining possibilities is correct.

Question 4

Not yet answered

Marked out of 7.00

v1 (latest)

Calculate $(2+i^7)(3-i^{18})$.

Select one:

- a. $8+4i$
- b. $7-i$
- c. $5-5i$
- d. $8-4i$
- e. None of the remaining possibilities is correct.

Question 5

Not yet answered

Marked out of 8.00

v1 (latest)

Solve the system of equations $2x^2+y^2+4xy=1$ and $2x+3y=5$ and decide which of the statements is true.

Select one:

- a. The system has no real soultions.
- b. None of the remaining possibilities is correct.
- c. The product of solutions x and y is -16.
- d. $x_1=10-6\sqrt{3},\ y_1=4\sqrt{3}-5$ and $x_2=10+6\sqrt{3},\ y_2=-4\sqrt{3}-5$
- e. The system has infinitely many solutions.

Question **6**

Not yet answered

Marked out of 6.00

v1 (latest)

Express the cylinder bottom radius (r) as a function of its height (v), if we know that the number expressing the surface of the closed cylinder is twice the number expressing its volume.

Select one:

- a. None of the remaining possibilities is correct.
- b. It is valid for any cylinder with bottom radius $r = 1\,cm$.
- c. $r = \frac{v}{v-4}$
- d. $r = \frac{v}{v-1}$
- e. $r = \frac{v-1}{v}$

Question **7**

Not yet answered

Marked out of 6.00

v1 (latest)

Consider a two-digit decimal number whose two digits added together give 5. If we swap the two digits and from this number we subtract the original one, we obtain 9. Determine the original number.

Select one:

- a. 67
- b. 32
- c. 76
- d. 23
- e. None of the remaining possibilities is correct.

Question **8**

Not yet answered

Marked out of 7.00

v1 (latest)

Calculate the greatest common divisor of 284, 1024, 364.

Select one:

- a. 4
- b. None of the remaining possibilities is correct.
- c. 8
- d. 12
- e. 2

Question 9

Not yet answered

Marked out of 6.00

v1 (latest)

Find the inverse to the function $f(x) = 2e^{3+2x}$.

Select one:

- a. None of the remaining possibilities is correct.
- b. The inverse function does not exist.
- c. $f^{-1}(x) = \frac{1}{2}\ln\left(\frac{x}{2}\right) - \frac{3}{2}$
- d. $f^{-1}(x) = \frac{1}{4}\ln x - 6$
- e. $f^{-1}(x) = \frac{1}{2}e^{\frac{x}{2}} - \frac{3}{2}$

Question 10

Not yet answered

Marked out of 7.00

v1 (latest)

Given the function $f(x) = 2x^2 + x$, calculate the value of the difference $f(t+1) - f(t-1)$.

Select one:

- a. $8t + 2$
- b. $10t$
- c. 4
- d. None of the remaining possibilities is correct.
- e. $2t + 2$

Question 11

Not yet answered

Marked out of 7.00

v1 (latest)

Find the absolute term of the binomial expansion $\left(2x + \frac{3}{\sqrt{x}}\right)^6$.

Select one:

- a. 324
- b. None of the remaining possibilities is correct.
- c. 4860
- d. 2160
- e. 144

Question **12**

Not yet answered

Marked out of 6.00

v1 (latest)

A swimming pool administration keeps monthly visitors statistics. One quarter of visitors comes for swimming at least twice a week and one fifth of them comes even every day. One fifth of visitors comes once a week. The rest are irregular visitors who come once a month or so. Every tenth visitor never returns after the first visit. Decide which of the statements is correct.

Select one:

- a. None of the remaining possibilities is correct.
- b. There are 65% of regular visitors.
- c. There are 65% of irregular visitors.
- d. At least 45% of visitors come on a regular basis.
- e. 5% of visitors come exactly twice a week.

Question **13**

Not yet answered

Marked out of 7.00

v1 (latest)

Determine which of the following is equivalent to the proposition: "*If the sun shines, then we shall go on a trip.*"

Select one:

- a. The sun will shine and we shall not go on a trip.
- b. None of the remaining possibilities is correct.
- c. If we go on a trip, then the sun will shine.
- d. If the sun does not shine, then we shall not go on a trip.
- e. If we do not go on a trip, then the sun will not shine.

Question **14**

Not yet answered

Marked out of 6.00

v1 (latest)

Find all real solutions of the equation $\sqrt{x^2+2x-8} = \sqrt{2x+3}$.

Select one:

- a. $x = \sqrt{11}$
- b. None of the remaining possibilities is true.
- c. $x = \pm\sqrt{11}$
- d. $x = 2, x = -4$
- e. The equation has no real solutions.

Question 15

Not yet answered

Marked out of 7.00

v1 (latest)

Calculate the roots of the quadratic equation $x^2 - 30x + 81 = 0$ and then insert such four numbers between them that you obtain six consecutive members of a growing arithmetic sequence. Decide which of the statements is correct.

Select one:

- a. The sum of the first and the last inserted number is 27.
- b. The common difference of this sequence is $d = 4$.
- c. The fourth member of the sequence is $\frac{87}{5}$.
- d. None of the remaining possibilities is correct.
- e. The third member of the sequence is 15.