SSAT 数学硬骨头 III

Question

Calculate the following and choose the best estimate:

$$\frac{18,992,564 + 3,004,436}{1,001,283}$$

Options:

- **A)** $\frac{1}{50}$
- **B)** $\frac{1}{5}$
- **C)** 2
- **D)** 20
- **E)** 200

Question

In the trapezoid $ABCD$:

- AB and CD are the parallel bases.
- The lengths of the bases are:
  - $AB = 6x + 3$
  - $CD = 2x - 1$.
- The height of the trapezoid is $4x + 2$.
- The non-parallel sides are $BC = 3x + 4$ and $AD = 5x - 2$.

What is the area of the trapezoid $ABCD$ in terms of x?

Options:

- **A)** $16x^2 + 20x + 4$
- **B)** $24x^2 + 18x + 6$
- **C)** $28x^2 + 12x - 2$
- **D)** $30x^2 + 15x + 3$
- **E)** $32x^2 + 10x - 5$

Question

The function $g(x)$ is defined by:

$$g(x) = 3x^5 - 2x^3 + x^2.$$

What is the value of $g(-2)$?

Question

What is the solution to:

$$5\sqrt{25x} = 45?$$

Question

Simplify the following expression:

$$7^{12} + 7^{12} + 7^{12} + 7^{12} + 7^{12}.$$

$$3^{15} + 5 \cdot 3^{15} + 7 \cdot 3^{15}.$$

Question

In the xy-coordinate plane, what is the slope of a line that is **perpendicular** to the line given by the equation:

$$5x - 7y + 3 = 0?$$

Question

Which of the following expressions is equivalent to $x^6 - 64$?

Options:

A) $(x^3 - 4)^2$

B) $(x - 2)^3(x + 2)^3$

C) $(x^2 - 2)^3$

D) $(x^2 - 4)(x^4 + 4x^2 + 16)$

E) $(x^3 - 8)(x^3 + 8)$