

Exercise Set 4 (No Calculator)

1

If $2a^2 + 3a - 5a^2 = 9$, what is the value of $a - a^2$?

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2

If $(200)(4,000) = 8 \times 10^m$, what is the value of m ?

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3

If $w = -10^{30}$, what is the value of $\frac{8w^2}{(8w)^2}$?

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4

If $2^x = 10$, what is the value of $5(2^{2x}) + 2^x$?

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5

If $(x + 2)(x + 4)(x + 6) = 0$, what is the greatest possible value of $\frac{1}{2^x}$?

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6

If $(4 + 4\sqrt{2})^2 = a + b\sqrt{2}$, where a and b are integers, what is the value of $a + b$?

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7

If $\frac{a}{3 + \sqrt{5}} = \frac{3 - \sqrt{5}}{b}$, what is the value of $(ab)^{\frac{3}{2}}$?

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8

If $9^x = 25$, what is the value of 3^{x-1} ?

- A) $\frac{3}{25}$ B) $\frac{5}{3}$ C) $\frac{25}{3}$ D) 24

9

If $g(x, y) = \frac{2x}{y^3}$ and a and b are positive numbers, what is the value of $\frac{g(4a, 2b)}{g(a, b)}$?

- A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 2 D) 4

10

Which of the following is equivalent to $\frac{2^n \times 2^n}{2^n \times 2}$ for all positive values of n ?

- A) 2 B) 2^n C) 2^{n-1}
D) 2^{2n}

11

Which of the following is equivalent to $3^m + 3^m + 3^m$ for all positive values of m ?

- A) 3^{m+1} B) 3^{2m} C) 3^{3m}
D) 3^{3m+1}

12

If x is a positive number and $5^x = y$, which of the following expresses $5y^2$ in terms of x ?

- A) 5^{2x} B) 5^{2x+1} C) 5^{3x}
D) 25^{2x}