

Desmos Regression Full Guide

1. The expression $\frac{33x + 160}{x(x + 40)}$ is equivalent to $\frac{p}{x} + \frac{w}{x + 40}$, where p and w are constants. What is the value of w ?

2.

$$\begin{cases} f(x) = x^3 + bx \\ g(x) = 4x^2 - 12x \end{cases} \quad (1)$$

If $f(x) \cdot g(x) = 4x^5 - 12x^4 + 16x^3 - 48x^2$, what is the value of b?

3. $f(x)$ is defined by $f(x) = ax^2 + bx + c$, and passes through the points $(3, 0)$ and $(-4, 0)$. a, b and c are integers. Which of the following could be the value of $a + b$ if $a > 1$
- A. 1
 - B. 3
 - C. 5
 - D. 6

4. The function $f(x)$ is defined as $f(x) = a^x + b$, where a and b are positive constants. If the graph of $f(x)$ passes through the points $(0, 7)$ and $(2, 10)$, what is the value of ab ?

5.

$$g(x) = \frac{x^2 + x - a}{x^3 + x - b} \quad (2)$$

The graph of $y = g(x)$ passes through the points $(0, 17)$ and $g(-17) = 0$. What is the value of b ?

- A. 17
- B. 16
- C. -16
- D. -17

6.

x	$g(x)$
2	$\frac{18}{7}$
5	3
10	$\frac{10}{3}$

If $g(x) = \frac{f(x)}{x+5}$, where $f(x)$ is a linear function, what is the y-intercept of $f(x)$?

- A. (0, 4)
- B. (0, 6)
- C. (0, 8)
- D. (0, 10)

7. Which of the following expressions has a factor of $x + 3b$, where b is a positive integer constant?

A. $4x^2 + 28x + 12b$

B. $4x^2 + 32x + 12b$

C. $4x^2 + 24x + 12b$

D. $4x^2 + 36x + 12b$

8. The expression $-11x^2 + bx - 98$, can be written in the form $(mx + n)(x + p)$, where m, n , and p are integer constants. Which value must be an integer?

- A. $\frac{b}{m}$
- B. $\frac{b}{n}$
- C. $\frac{98}{p}$
- D. $\frac{98}{m}$

9. The expression $8x^2 + 2x - 3$ can be represented as $(4x + a)(2x + b)$ where a and b are integer factors. This expression can also be written as $(4x + c)(2x + d)$ where d is a non-integer factor. What is the value of $a + d$?

10.

$$\sqrt[4]{p^3} = t^{\frac{1}{3}} \tag{3}$$

In the equation shown above, $p > 1$ and $t > 1$. If $t = p^{2n+1}$, what is the value of n ?

11. The positive number a is 1,976% of the sum of the positive numbers b and c , and b is 76% of c . What percent of b is a ?
- A. 22.85%
 - B. 45.76%
 - C. 2,285%
 - D. 4,576%

12. A line intersects a set of parallel lines forming four acute angles and four obtuse angles. The measure of one of the acute angles can be expressed as $(11x - 360)^\circ$. The sum of the acute angle and three of the obtuse angles can be expressed as $(-22x + w)^\circ$. What is the value of w ?

13. A right square pyramid has a total surface area of 9,680 square inches, and the combined surface area of the four lateral faces of this pyramid is 8,080 square inches. What is the height, in inches, of this pyramid?
- A. 99
 - B. 20
 - C. 101
 - D. 40