Precalculus

Basic exponent equation of type $c^{px+q} = Ad^{rx+s}$

Todor Miley

2019

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

Solve.

$$2x+5$$
 _ 5.2-x+1

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$
$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+3}$$

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

 $2^{(\log_2 3)(2x+5)-(-x+1)} = 5$

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = \xi$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5)+x-1 = \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} =$$

$$(\log_2 3)(2x + 5) + x - 1 = \log_2 5$$

$$x(+) + = \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} =$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x\left(2\log_2 3 + \right) + = \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = \frac{1}{2}$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5)+x-1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5 + 1$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5 + 1$$

$$x = \frac{\log_2 5 + 1}{1}$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5 + 1$$

$$x = \frac{\log_2 5 + 1 - 5\log_2 3}{2}$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} \ = \ 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5 + 1$$

$$x = \frac{\log_2 5 + 1 - 5\log_2 3}{2\log_2 3 + 1}$$

Common base

$$a = b^{\log_b a}$$

Solve.

$$3^{2x+5} = 5 \cdot 2^{-x+1}$$

$$\left(2^{\log_2 3}\right)^{2x+5} = 5 \cdot 2^{-x+1}$$

$$2^{(\log_2 3)(2x+5)} = 5 \cdot 2^{-x+1}$$

$$\frac{2^{(\log_2 3)(2x+5)}}{2^{-x+1}} = 5$$

$$2^{(\log_2 3)(2x+5)-(-x+1)} = 5$$

$$(\log_2 3)(2x+5) + x - 1 = \log_2 5$$

$$x(2\log_2 3 + 1) + 5\log_2 3 = \log_2 5 + 1$$

 $x = \frac{\log_2 5 + 1 - 5\log_2 3}{2\log_2 3 + 1}$

$$x \approx -1.1038$$

Common base

$$a = b^{\log_b a}$$

Apply log₂

Calculator