

A2.A.28: Logarithmic Equations 3: Solve a logarithmic equation by rewriting as an exponential equation

- 1 If $\log 28 = \log 4 + \log x$, what is the value of x ?
 - 1) 7
 - 2) 14
 - 3) 24
 - 4) 32

- 2 In the equation $\log_x 4 + \log_x 9 = 2$, x is equal to
 - 1) $\sqrt{13}$
 - 2) 6
 - 3) 6.5
 - 4) 18

- 3 Solve for x : $\log_b 36 - \log_b 2 = \log_b x$

- 4 Solve for x : $\log_8 (x - 6) + \log_8 (x + 6) = 2$

- 5 Solve for all values of x :
 $\log_3 (x + 4) + \log_3 (x - 2) = 3$

- 6 Solve for x : $\log_4 (x^2 + 3x) - \log_4 (x + 5) = 1$

- 7 Solve for x : $\log_3 (x^2 - 4) - \log_3 (x + 2) = 2$

- 8 Solve algebraically, to the *nearest hundredth*, for all values of x :
 $\log_2 (x^2 - 7x + 12) - \log_2 (2x - 10) = 3$

- 9 Solve algebraically for all values of x :
 $\log_{(x+3)} (2x + 3) + \log_{(x+3)} (x + 5) = 2$

A2.A.28: Logarithmic Equations 3: Solve a logarithmic equation by rewriting as an exponential equation**Answer Section**

1 ANS: 1 REF: 069626siii

2 ANS: 2 REF: 080209b

3 ANS:
18

REF: 080624b

4 ANS:
10

REF: 089342siii

5 ANS:
5

REF: 010439siii

6 ANS:
{5, -4}

REF: 060230b

7 ANS:
11

REF: 060833b

8 ANS:

$$\log_2 \left(\frac{x^2 - 7x + 12}{2x - 10} \right) = 3 \quad x = \frac{23 \pm \sqrt{(-23)^2 - 4(1)(92)}}{2(1)} \approx 17.84, 5.16$$

$$\frac{x^2 - 7x + 12}{2x - 10} = 8$$

$$x^2 - 7x + 12 = 16x - 80$$

$$x^2 - 23x + 92 = 0$$

REF: 081539a2

9 ANS:

$$\log_{(x+3)}(2x+3)(x+5) = 2 \quad -6 \text{ is extraneous}$$

$$(x+3)^2 = (2x+3)(x+5)$$

$$x^2 + 6x + 9 = 2x^2 + 13x + 15$$

$$x^2 + 7x + 6 = 0$$

$$(x+6)(x+1) = 0$$

$$x = -1$$

REF: 011438a2