Answer key

The method: Solving exponential equations with logs

Get the power alone, then take the log of both sides. Leave the answer exact: x = log₃ 20.

$4 \cdot 5^x = 192 \quad x = \log_5 48$

$5^x = 48$ divide by 4 first

$x = \log_5 48$ take log base 5 of both sides

$e^x = 45 \quad x = \ln 45$

$x = \ln 45$ take ln of both sides

$3^{x+2} = 12 \quad x = \log_3 12 - 2$

$x + 2 = \log_3 12$ take log base 3 of both sides

$x = \log_3 12 - 2$ subtract 2

Problems 1 and 2 worked out · Version 0A

$7^x = 4 \quad x = \log_7 4$

$x = \log_7 4$ take log base 7 of both sides

$3^x = 34 \quad x = \log_3 34$

$x = \log_3 34$ take log base 3 of both sides

Solving exponential equations with logs · Version 0A

1) $x = \log_7 4$ 2) $x = \log_3 34$ 3) $x = \log_3 44$

4) $x = \ln 58$ 5) $x = \ln 14$ 6) $x = \log_7 23$

7) $x = \log_7 60$ 8) $x = \log_2 9$ 9) $x = \log_7 6$

10) $x = \frac{\ln 19}{3}$ 11) $x = \log_5 18$ 12) $x = \log_3 7 + 5$

13) $x = \log_5 2$ 14) $x = \frac{\ln 15}{2}$ 15) $x = \log_5 37 - 2$

16) $x = \log_2 22$ 17) $x = \log_3 32$ 18) $x = \ln 50$

19) $x = \ln 41$ 20) $x = \log_5 31$ 21) $x = \log_3 53 + 3$

22) $x = \log_2 29 + 5$ 23) $x = \log_2 45$

24) $x = \log_2 11 + 4$ 25) $x = \log_3 54$ 26) $x = \frac{\ln 26}{2}$

27) $x = \log_7 12$ 28) $x = \log_2 46$ 29) $x = \log_5 51 - 4$

30) $x = \log_2 41 + 2$