

Logarithms for Humans

SELF CHECK 3

Another self-check for your own amusement!

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Question 1 [10 points]

Writing $p = \log_5(w)$ is equivalent to writing:

- a) $5^w = p$ b) $5^p = w$ c) $p^5 = w$ d) $p^w = 5$
e) $w^5 = p$ f) $w^p = 5$ g) My brain hurts!

Question 2 [20 points]

Could you explain to a friend why $\log_5(25^7)$ equals 14?

- a) Yes! With confidence!
b) Yes-ish
c) Nope!
d) What sort of friend would put up with me talking about this?

Question 3 [30 points]

i) Who is the person who has Alice's Social Security Number?

- a) Alice b) Brian c) Corey d) It is not possible to know.

ii) What is the value of $\log_{13}(13^{8045})$?

- a) 13 b) 8045 c) It is not possible to know.
d) What has this question got to do with part i)?

iii) What is the value of $8^{\log_8(605)}$?

- a) 8 b) 605 c) It is not possible to know.
d) What has this question got to do with part i)?

Question 4 [40 points]

What value for b makes the following statement true?

$$\log_b(32) = 5$$

- a) 2 b) 3 c) 4 d) 5 e) Something else

Question 5 [50 points]

What value for b makes the following statement true?

$$\log_5(b) = -1$$

Question 6 [There's a pattern to the number of points]

What value of x makes the following statement true?

$$\log_4(100 - 2x) = 3$$

(Again, why equations like this would ever appear in the real-world beats me!)

Answers:

1. b) 2. What's your answer? (Noticing $25^7 = (5^2)^7 = 5^{14}$ helps.
3. i) a) [Questions ii] and iii) each have the same logical feel as answering i).
4. a) 5. $\frac{1}{5}$ 6. 18