Quick Questions

Many teachers have quick answers to the following questions.

Please provide quick answers and one-sentence explanations, when requested. Answer off the top of your head, **without a calculator**, and spend **no more than 40 minutes** on these.

Question 1 *Evaluate* $-x^2$ *when* $x = 9$.

Question 2 *Evaluate* x^{-2} *when* $x = 9$.

Question 3 *Evaluate* $x^{1/2}$ *when* $x = 9$.

Question 4 *Evaluate* $\frac{2}{0}$ *and explain your answer.*

Question 5 *Evaluate* $\frac{0}{0}$ *and explain your answer.*

Question 6 *Evaluate* $\frac{0}{2}$ *and explain your answer.*

Question 7 *Is* 0 *even, odd, neither, or both? Explain.*

Question 8 *Give another explanation for the previous question.*

Question 9 *Is* $\sqrt{4} = \pm 2$*? Explain.*

Learning outcomes:

Question 10 *To divide fractions, is it okay to convert to a common denominator and then ignore the denominators and divide the numerators? Explain.*

Question 11 *To divide fractions, it is okay to divide the numerators and divide the denominators? Explain.*

Question 12 *Write a "story problem" for* $1\frac{3}{4} \div \frac{1}{2}$.

Question 13 *Is* $15 \equiv 7 \mod 4$*? Explain.*

Question 14 *Is* $2 \equiv 17 \mod 5$*? Explain.*

For the next three questions, suppose f is a function with a domain and range that are both subsets of the real numbers and that $f(3) = 2$. Based on this information:

Question 15 *Where is the* 3*?*

Question 16 *Where is the* 2*?*

Question 17 *Where is the* $f(3)$*?*

Question 18 *Is* $0.99999\cdots = 1$*? Explain.*

Question 19 *Why is* $a^0 = 1$*. Does it matter what* a *is?*

Question 20 *Why is* $a^{-n} = \frac{1}{a^n}$*. Does it matter what* a *is? Does it matter what* n *is?*

Question 21 *What does it mean for a number to be irrational?*

Question 22 *How long did you spend on these questions?*