BECA/Huson/Algebra 2: Complex Numbers & Rational Exponents Name:
9 February 2024

3.8 Quiz: Working with exponents **A.SSE.3c Exponent properties**

Do Not Use a Calculator

1. Select all of the solutions to $x^2 = 36$.

   (a) $x = 4 \times 9$

   (b) $x = 2 \times 18$

   (c) $x = 6$

   (d) $x = -6$

   (e) $x = 18$

   (f) $x = -18$

2. Find the value of each variable that makes the equation true.

   (a) $\frac{5^9}{5^5} = 5^b$ $a =$

   (b) $11^c = 1$ $b =$

   (c) $(2^3)^4 = 2^d$ $c =$

   (d) $3^e = \frac{1}{9}$ $d =$

   (e) $7^5 \cdot 7^2 = 7^a$ $e =$

   (f) $4^5 \cdot f^5 = 8^5$ $f =$

3. Evaluate each expression.

   (a) $\frac{1}{5} \cdot 30 =$

   (b) $\frac{5}{6} \cdot 12 =$

   (c) $\frac{4}{7} \cdot 12 \cdot \frac{7}{4} =$

   (d) $\frac{3}{5} \cdot \frac{7}{3} \cdot 10 =$

4. $s = 2x - 1$ and $t = 5x + 7$. (AI-A.APR.1 Add, subtract, & multiply polynomials)

   For each expression, write an equivalent expression and simplify.

   (a) $s + t =$

   (b) $s - t =$

   (c) $st =$

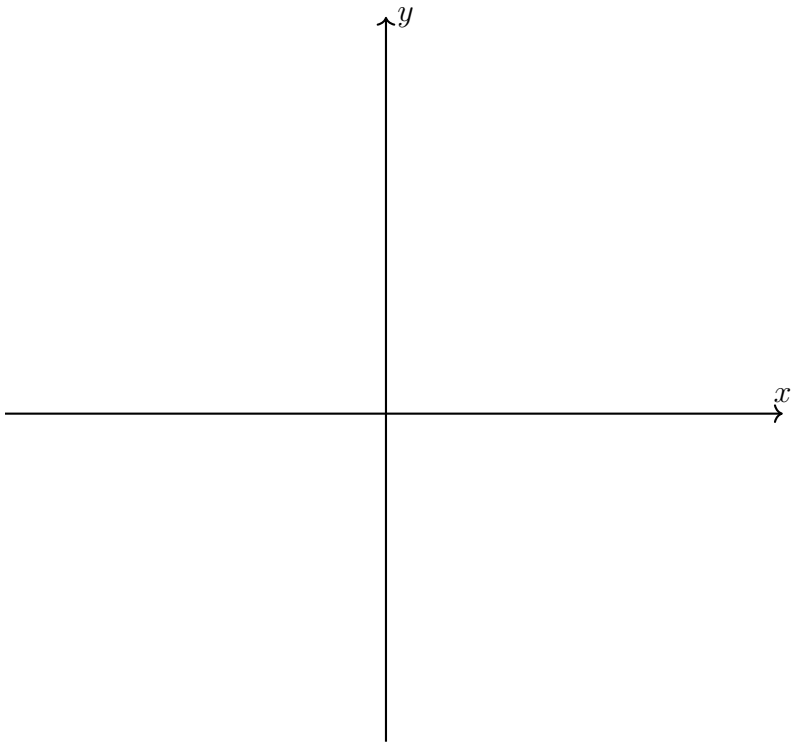
A2-F.BF.2 Write arithmetic and geometric sequences with recursive formulas

5. Given the geometric sequence beginning $a_1 = 9$, $a_2 = 3$, $a_3 = 1$, $a_4 = \frac{1}{3}, \ldots$

   (a) Write a recursive definition of the sequence.

   (b) Write a formula expression of the sum of the first 10 terms of the sequence. (You do not need to calculate the sum's value.)

6. Given the function $f(x) = (3x + 10)(x + 1)(x - 2)$. (AII-F.IF.7c Graph polynomials)



   (a) Sketch a graph of the function.

   (b) Mark and label all x-intercepts of the graph.

   (c) Calculate the function's y-intercept and mark it on the graph.