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

3.7 Pretest: Exponents **A.SSE.3c Exponent properties**

Do Not Use a Calculator

1. Select all of the solutions to $x^2 = 16$.

   (a) $x = 4$ (d) $x = -8$

   (b) $x = -4$ (e) $x = 16$

   (c) $x = 8$ (f) $x = -16$

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

   (a) $5^2 \cdot 5^3 = 5^a$ $a = 5$ (d) $(4^3)^5 = 4^d$ $d = 15$

   (b) $\frac{3^7}{3^6} = 3^b$ $b = 1$ (e) $2^e = \frac{1}{2}$ $e = -1$

   (c) $7^c = 1$ $c = 0$ (f) $3^4 \cdot f^4 = 15^4$ $f = 5$

3. Evaluate each expression.

   (a) $\frac{1}{4} \cdot 24 = 6$ (c) $\frac{3}{5} \cdot 8 \cdot \frac{5}{3} = 8$

   (b) $\frac{3}{2} \cdot 10 = 15$ (d) $\frac{2}{3} \cdot \frac{5}{2} \cdot 9 = 15$

4. $p = 3x + 1$ and $q = 2x - 5$.

   For each expression, write an equivalent expression in standard form.

   (a) $p + q = (3x+1) + (2x-5) = 5x - 4$

   (b) $p - q = (3x+1) - (2x-5) = x + 6$

   (c) $pq = (3x+1)(2x-5) = 6x^2 - 15x + 2x - 5$
   $= 6x^2 - 13x - 5$

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

5. Given the geometric sequence beginning $a_1 = 2$, $a_2 = 1$, $a_3 = \frac{1}{2}$, $a_4 = \frac{1}{4}, \ldots$

   (a) Write a recursive definition of the sequence. $r = \frac{1}{2}$

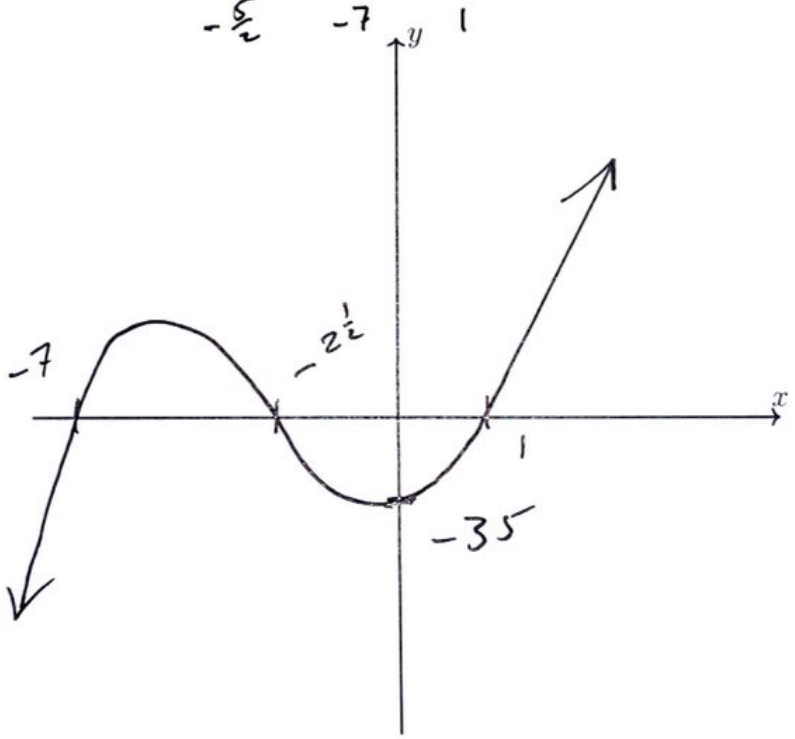
   $a_1 = 2$

   $a_n = \frac{1}{2} a_{n-1}$

   (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.)

   $S_{10} = 2\left(\frac{1-\left(\frac{1}{2}\right)^{10}}{1-\frac{1}{2}}\right)$

6. Given the function $f(x) = (2x+5)(x+7)(x-1)$. (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.

   $f(0) = (2(0)+5)(0+7)(0-1)$

   $= 5 \cdot 7 \cdot (-1) = -35$