3.7 Pretest: Working with 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) $5^2 \cdot 5^3 = 5^a$ $a =$ (d) $(4^3)^5 = 4^d$ $d =$

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

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

3. Evaluate each expression.

   (a) $\dfrac{1}{4} \cdot 24$ (c) $\dfrac{3}{5} \cdot 8 \cdot \dfrac{5}{3}$

   (b) $\dfrac{3}{2} \cdot 10$ (d) $\dfrac{2}{3} \cdot \dfrac{5}{2} \cdot 9$

4. $p = 3x + 1$ and $q = 2x - 5$.   (AI-A.APR.1 Add, subtract, & multiply polynomials)

   For each expression, write an equivalent expression and simplify.

   (a) $p + q$

   (b) $p - q$

   (c) pq

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.

   (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 $f(x) = (2x + 5)(x + 7)(x - 1)$.   (AII-F.IF.7c Graph polynomials)
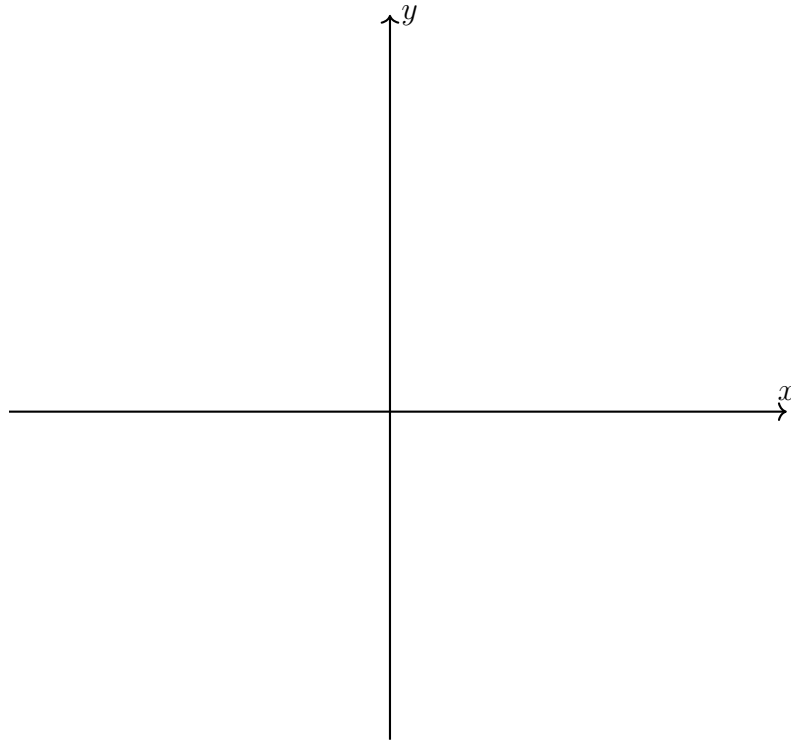
   (a) Sketch a graph of the function.

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

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