

Quiz #0 (Diagnostic Quiz), 8/22  
Math 156 (Calculus I), Fall 2023

This quiz is designed to check your background in high school algebra. It will not be graded.

1. Simplify the following expressions:

(a)  $(-3)^4$       (b)  $3^{-4}$       (c)  $\frac{5^{23}}{5^{21}}$       (d)  $\sqrt{200} - \sqrt{32}$       (e)  $(3a^3b^3)(4ab^2)^2$

2. Solve the following equations:

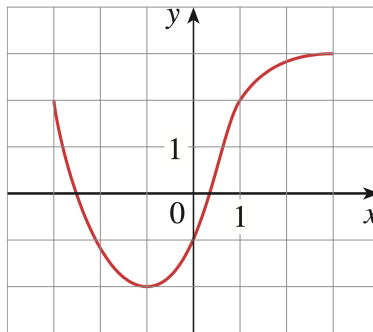
(a)  $\frac{2x}{x+1} = \frac{2x-1}{x}$       (b)  $x^2 - x - 12 = 0$

3. Decide whether each of these identities is true or false:

(a)  $(p+q)^2 = p^2 + q^2$       (b)  $\sqrt{ab} = \sqrt{a}\sqrt{b}$

4. Find the equation of a line that passes through point  $(2, -5)$  and is parallel to line  $2x - 4y = 3$ .

5. Consider the function  $f$  graphed below:



- (a) State the value of  $f(-1)$ .  
(b) Estimate the values of  $x$  for which  $f(x) = 0$ .  
(c) What are the domain and the range of  $f$ ?
6. Convert from degrees to radians (for (a) and (b)) or radians to degrees (for (c)):

(a)  $300^\circ$       (b)  $-18^\circ$       (c)  $\frac{5\pi}{6}$

7. Find the exact value of these evaluations of trigonometric functions (assume input is radians):

(a)  $\tan(\pi/3)$       (b)  $\sin(7\pi/6)$