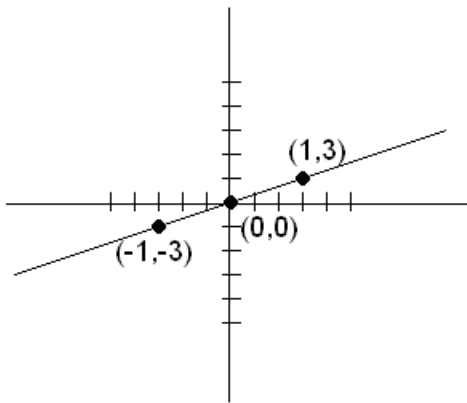
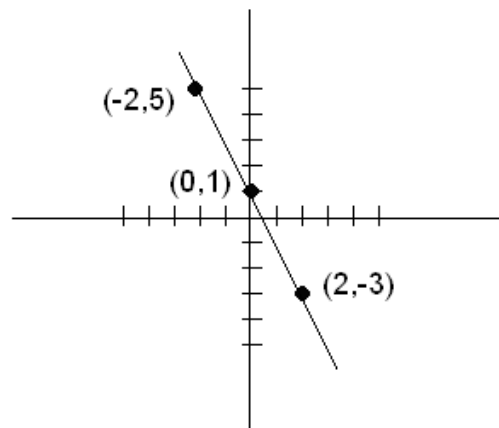


7: Linear Functions --- Answers

1. A function where the rate of change, (change in input)/(change in output), is constant over the entire domain of the function.
2. Slope and y-intercept
3.
 - a) (4,5)
 - b) $y = \frac{3}{4}x + 2$
4. $f(2) = 3; f(3) = 5; f(10) = 19$
5. $f(2) = 3$
6.
 - a) The equation has the form $y = mx + b$.
 - b) The slope is $m = 3$.
 - c) The y-intercept is $b = -1$.
 - d) $f(0) = -1$
 - e) $f(1) = 2$
7. a)

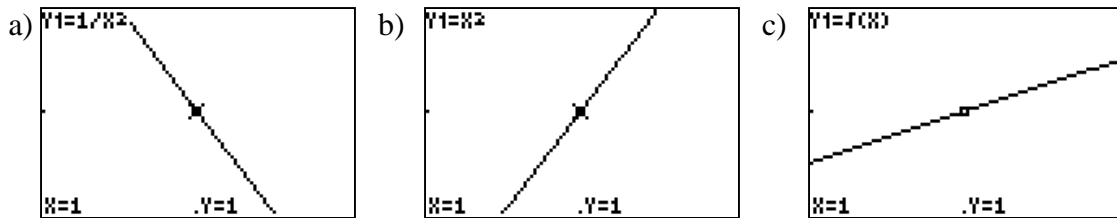


b)



8. The slope between A and C must have the same slope of that between A and B and B and C.
9.
 - a) $y = -\frac{1}{4}x + 5$
 - b) $y = x + 10$
 - c) $y = 2x + 4$
 - d) $y = x + 1$
10.
 - a) $y = -3x - 3$
 - b) $y = 4x + 4$
 - c) No, the slope is not consistent over the domain.
 - d) $y = 2x - 8$

11. Only (a) was a line that included the y -intercept.
12. It might look linear over part of its domain, but not be over the entire domain. Also, the viewing window might be too small.
13. They all represent linear functions.
- 14.
- $c = 0.23m + 1$, where c is the cost and m is the number of minutes.
 - The y -intercept represents the cost when no minutes are used; there is just the \$1 service fee.
 - \$139
15. All of the viewing windows are $0.99 \leq x \leq 1.01$ and $0.99 \leq y \leq 1.01$.



16. The one mile run is 63,360" while the 1600 meter run is 62,992". Therefore, the one mile run is longer.
- 17.
- $i = c/2.54$, where i is the number inches and c is number of centimeters
 - $i = 36y$, where i is the number of inches and y is the number of yards
 - $C = 5/9(F - 32)$, where C is degrees Celsius and F is degrees Fahrenheit
- 18.
- $102.\bar{6}$ ft/sec
 - $V_{FPS} = (5280/3600)V_{MPH}$, where V_{FPS} is the velocity in feet per second and V_{MPH} is the velocity in miles per hour.
19. Citgo would be \$1.70, Shell would be \$1.72, and Speedway would be \$1.71.