

Slopes of Tangent and Secant Lines Practice Quiz

- For the function $f(x) = 9x^2 - x + 2$, find the difference quotient.
 - $18x + 9h$
 - $18x + 9h^2 - 1$
 - $9x^2 + 18x + 9h - x - 2$
 - $18x + 9h - 1$
- For the function $f(x) = 4x^2 - 2x + 10$, find the average rate of change between $x = 3$ and $x = 4$.
 - 26
 - 34
 - 26
 - 18
- For the function $f(x) = x^3 - 4x^2 + 2x + 9$, find the difference quotient.
 - $3x^2 + 3xh + h^2 - 8x - 4h + 2$
 - $3x^2 + 3xh + h^2 - 8x - 4h + 2$
 - $3x^2 - 8x + 2$
 - $3x^2 - 8x + 2$
- For the function $f(x) = x^3 + x^2 + 8x + 2$, find the average rate of change over the interval $x = 2$ and $x = 3$.
 - 32
 - 52
 - 24
 - 41
- Find the difference quotient of the following function. You may assume $h = 0$ and use any method desired.
$$f(x) = -3x^{10} + 5x^9 - x^7 - 8x^5$$
 - $m = -30x^9 + 45x^8 - 7x^6 - 40x^4$
 - $m = -3x^{10} + 5x^9 - x^7 - 8x^5$
 - $m = -30x^{10} + 45x^9 - 7x^7 - 40x^5$
 - $m = -3x^9 + 5x^8 - x^6 - 8x^4$
- Given the function $f(x) = x^2 + 6x + 6$, find the equation of the secant line passing through the points at $x = -7$ and $x = 15$.
 - $y = 14(x + 7) + 321$
 - $y = -14(x + 15) + 13$
 - $y = 14(x + 7) + 13$
 - $y = \frac{1}{14}(x + 7) + 13$
- Given the function $f(x) = 4x^2 + 4x + 7$, find the equation of the tangent line at the point when $x = 4$ and the slope at that point is 36.
 - $y = 36(x - 4) + 87$
 - $y = (x - 4) + 87$
 - $y = -36(x - 4) + 87$
 - $y = 36(x - 4) + 735$
- Given the function $f(x) = 10x^2 + 4x + 8$, find the equation of the tangent line at the point when $x = -14$.
 - $y = 276(x + 14) + 1,912$
 - $y = -276(x + 14) + 1,912$
 - $y = -276(x + 14) + 1,496$
 - $y = (x + 14) + 1,912$

9. Given the function $f(x) = -10x^3 - 9x^2 - 6x + 10$, find the equation of the tangent line at the point when $x = 8$ and the slope at that point is $-2,070$.

- a. $y = 2,070(x - 8) - 5,734$
- b. $y = -2,070(x - 8) - 1,838$
- c. $y = (x - 8) - 5,734$
- d. $y = -2,070(x - 8) - 5,734$

10. Given the function $f(x) = 5x^3 + 5x^2 - 9x - 9$, find the equation of the tangent line at the point when $x = 10$.

- a. $y = 1,591(x - 10) + 5,401$
- b. $y = 1,591(x - 10) + 173$
- c. $y = (x - 10) + 5,401$
- d. $y = -1,591(x - 10) + 5,401$

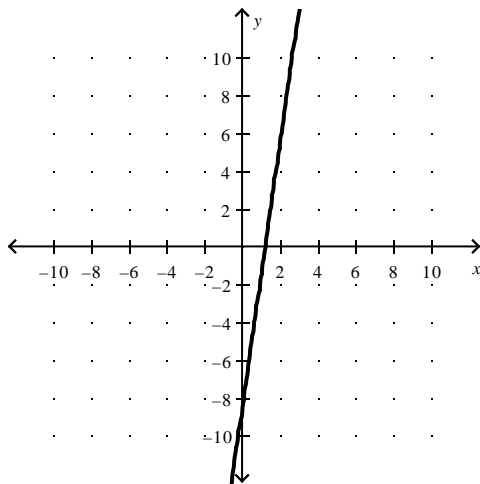
11. Given the function $f(x) = -3x^6 - 2x^2 - 9x - 6$, find the equation of the tangent line at the point when $x = 0$ and the slope at that point is -9 .

- a. $y = -9(x - 0) - 374$
- b. $y = (x - 0) - 6$
- c. $y = -9(x - 0) - 6$
- d. $y = 9(x - 0) - 6$

12. Given the function $f(x) = -x^6 - x^2 + 10x + 6$, find the equation of the tangent line at the point when $x = 1$.

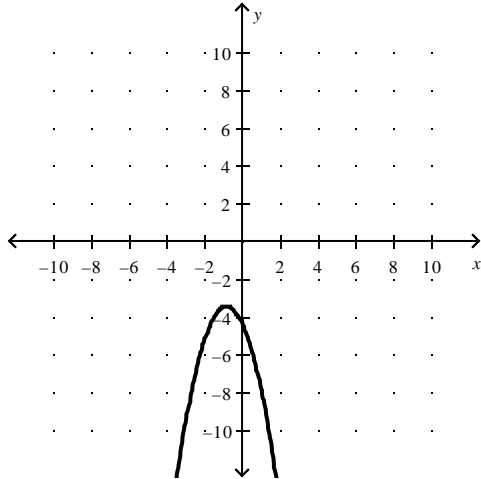
- a. $y = (x - 1) + 14$
- b. $y = 2(x - 1) - 113$
- c. $y = -2(x - 1) + 14$
- d. $y = 2(x - 1) + 14$

13. Estimate the slope of the tangent line at the point, $x = 2.4$



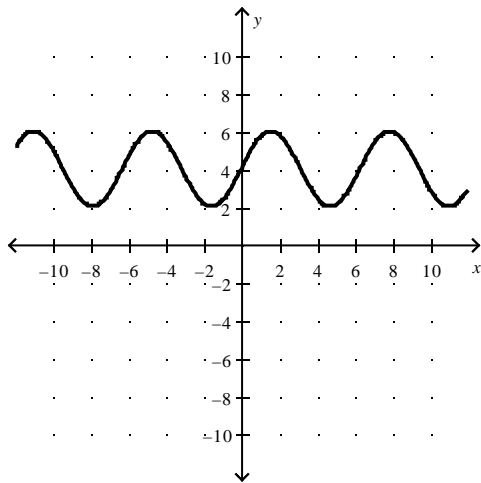
- a. The slope of the tangent line is $\frac{1}{7}$
- b. The slope of the tangent line is 7
- c. The slope of the tangent line is $-\frac{1}{7}$
- d. The slope of the tangent line is -9

14. Estimate the slope of the tangent line at the point, $x = -2.8$



- a. The slope of the tangent line is $\frac{1}{5}$
- b. The slope of the tangent line is $-\frac{1}{5}$
- c. The slope of the tangent line is 5
- d. The slope of the tangent line is -2

15. Estimate the slope of the tangent line at the point, $x = -0.1$



- a. The slope of the tangent line is approximately 5
- b. The slope of the tangent line is approximately -1
- c. The slope of the tangent line is approximately 1
- d. The slope of the tangent line is approximately 2

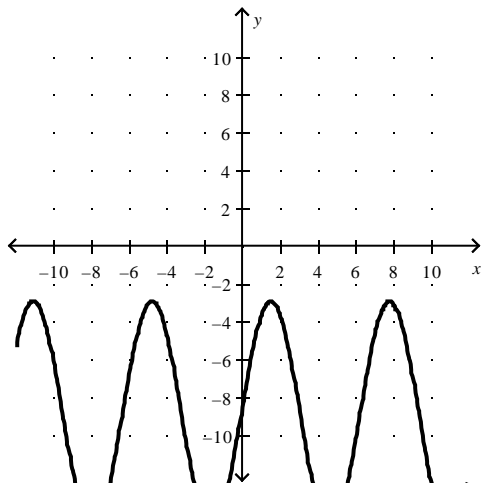
16. Expand the following binomial $(m + y)^2$

17. Expand the following binomial $10(x + b)^8$

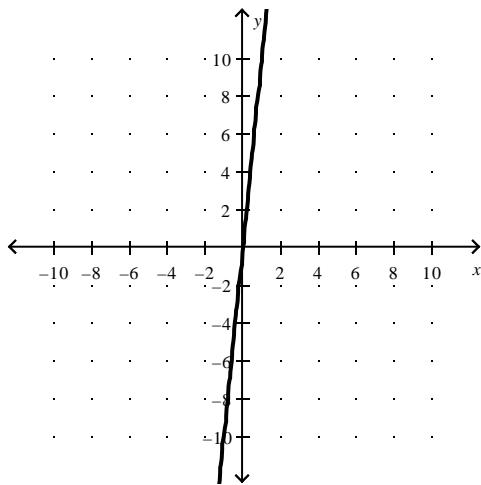
18. Expand the following binomial $(x + k)^6$

19. Expand the following binomial $9(x + k)^5$

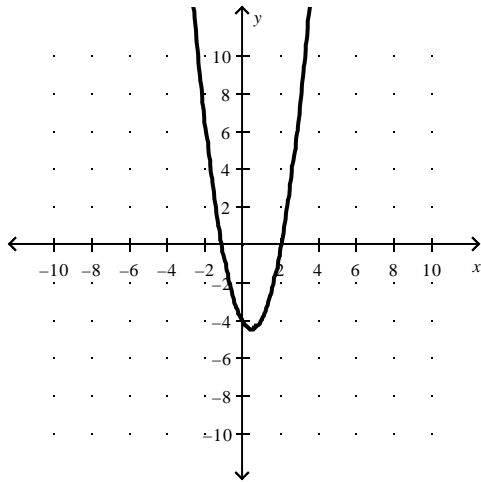
20. Explain the difference between a secant line and a tangent line.
21. Explain how you would obtain an approximation of a tangent line using a secant line.
22. Sketch the line tangent to the given graph at $x = -6.5$



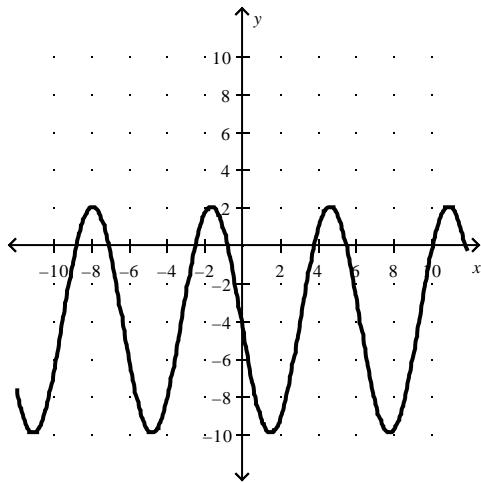
23. Sketch the line tangent to the given graph at $x = -0.7$



24. Sketch the line tangent to the given graph at $x = -2.1$



25. Sketch the line tangent to the given graph at $x = 1.4$



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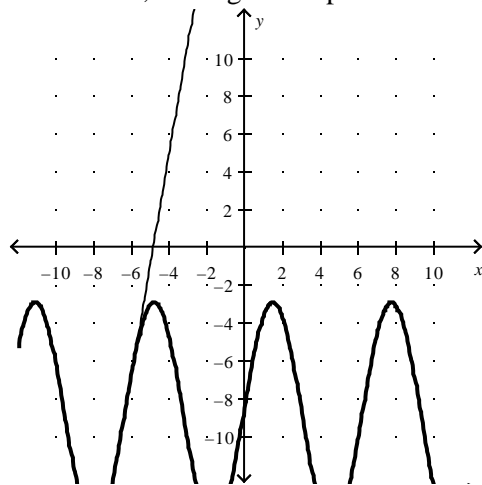
Answer Section

1. D
2. A
3. B
4. A
5. A
6. C
7. A
8. B
9. D
10. A
11. C
12. D
13. B
14. C
15. D
16. $m^2 + 2my + y^2$
17. $10x^8 + 80x^7b + 280x^6b^2 + 560x^5b^3 + 700x^4b^4 + 560x^3b^5 + 280x^2b^6 + 80xb^7 + 10b^8$
18. $x^6 + 6x^5h + 15x^4h^2 + 20x^3h^3 + 15x^2h^4 + 6xh^5 + h^6$
19. $9x^5 + 45x^4h + 90x^3h^2 + 90x^2h^3 + 45xh^4 + 9h^5$
20. SAMPLE ANSWER

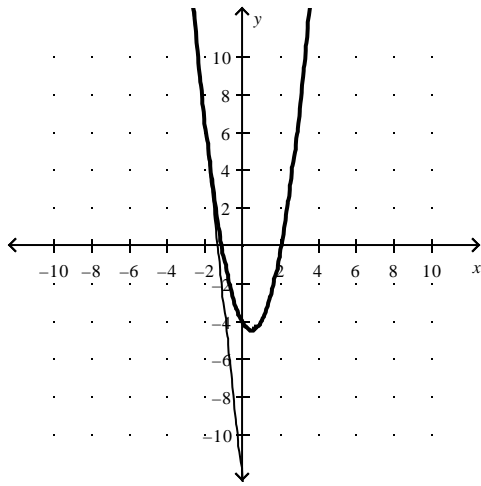
The difference between a tangent line and a secant line is that for the secant line you need two points and for the tangent line you need one point. For the secant line you get the slope using the two points and write the equation and for the tangent line you use the difference quotient to obtain the slope and then write the equation.

21. SAMPLE ANSWER

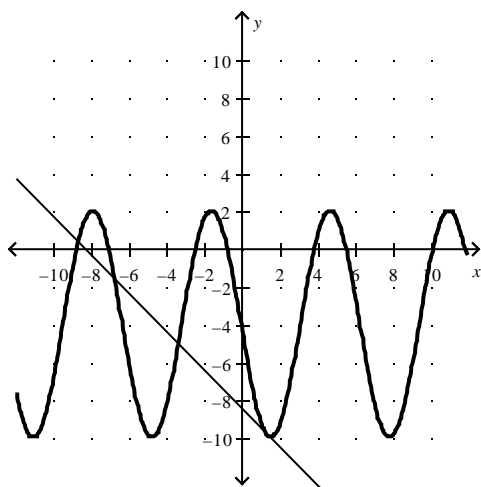
To obtain an approximation of a tangent line using a secant line would be by choosing two very close points for example letting x-coordinate equal 2 and the second x-coordinate be 2.01, then obtaining the corresponding y coordinates, finding the slope and writing the equation.



- 22.
23. The graph is its own target line.



24.



25.