Chapter 7 Practice Test 1

Name _____

Calculate the derivative of each function below.

_____   1. $f(x) = 4x^3 + 3x^2 - 10x + 3$

_____   2. $f(x) = x^3 + x^2 - x$

_____   3. $f(x) = 5x^{-4} + 3x^{-2} + x^{-1}$

_____   4. $f(x) = \dfrac{5}{x^3} + \dfrac{3}{x^2} - \dfrac{1}{2}x^2$

_____ 5.   What is the slope of the line tangent to the graph of
$f(x) = x^3 + 5x^2 - 10x + 3$ at the point $(1, 1)$?

_____ 6.   What is the slope of the line tangent to the graph of
$f(x) = 5x^4 - x + 6$ at the point $(2, 84)$?

_____ 7.   What is the equation of the line tangent to the graph of
$f(x) = 4x^3 + 2x - 10$ at the point $(1, -4)$?
Write the equation in slope intercept form.

_____ 8.   What is the equation of the line tangent to the graph of
$f(x) = x^4 + 4x^2 + 2x - 10$ at the point $(2, 26)$?
Write the equation in slope intercept form.

_____ 9.   Find the critical points on $f(x) = x^3 + 3x^2 - 45x$
Just list them as ordered pairs.
Don't worry about what type of critical point they might be.

_____ 10.   Find the critical points on $f(x) = x^3 - 12x$
Just list them as ordered pairs.
Don't worry about what type of critical point they might be.

11.   Find the critical points of $f(x) = 3x^3 - 18x^2 - 4$.
Determine whether each point represents a maximum, minimum, or point of inflection.

12. Find the x-intercept and y-intercept of $f(x) = 4x - 6$.

x-intercept = _____   y-intercept = _____

13. Find the x-intercept and y-intercept of $f(x) = x^2 - 10x + 9$.

x-intercept = _____   y-intercept = _____

Tell how many solutions exist to each equation by determining the discriminant**.**

14. $f(x) = 3x^2 - 4x - 1$ Discriminant value = _____   Number of solutions = _____
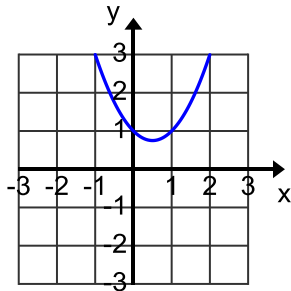
15. $f(x) = x^2 + 2x + 1$ Discriminant value = _____   Number of solutions = _____

Match the graphs below with the correct discriminant value. (Not actually accurate)
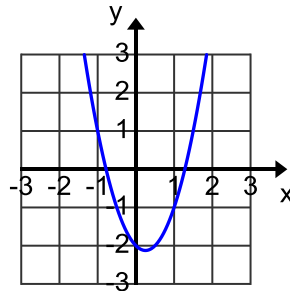
A. Discriminant is 40   B. Discriminant is 0   C. Discriminant is -35
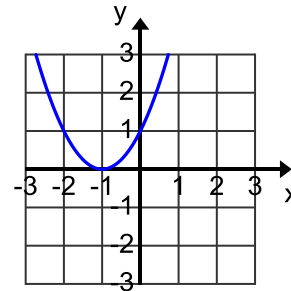

16. _____   17. _____   18. _____