Test Review 2

Date_____ Period____

For each problem, find the equation of the line tangent to the function at the given point. Your answer should be in slope-intercept form.

1) $f(x) = x^2 - 6x + 11$ at $(1, 6)$

2) $y = \frac{2}{x - 2}$ at $\left(-1, -\frac{2}{3}\right)$

3) $f(x) = \frac{x^2}{2} + x + \frac{5}{2}$ at $\left(-2, \frac{5}{2}\right)$

4) $f(x) = -x^3 + 3x^2 - 2$ at $(1, 0)$

Differentiate each function with respect to *x*.

5) $f(x) = -5x^3(4x^2 + 2)$

6) $y = (3x^5 + 5x^3 + 2)(x^2 - 1)$

7) $f(x) = (-5x^2 - 4) \cdot \frac{\cos x}{3}$

8) $f(x) = (-x^5 - 2x - 1) \cdot 5\csc x$

9) $f(x) = \frac{4x^3 - 2}{2x^4 - 5}$

10) $y = \frac{x^5 - 2x^4}{5x^5 - 3}$

11) $f(x) = \dfrac{5x^4 + 2}{4\cot x}$

12) $f(x) = \dfrac{-2x^5 + 5}{\sec x}$

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the velocity function $v(t)$ and the acceleration function $a(t)$.

13) $s(t) = t^4 - 15t^3$

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the velocity function $v(t)$, the acceleration function $a(t)$, and the times t when the particle changes directions.

14) $s(t) = t^2 - 3t - 40$

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the velocity function $v(t)$ and the acceleration function $a(t)$. Then determine the average velocity from t=1 to t=4 seconds.

15) $s(t) = t^4 - 8t^3$

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the velocity function $v(t)$ and the acceleration function $a(t)$. Then determine the instantaneous acceleration at t=5 seconds.

16) $s(t) = t^4 - 11t^3$