Senior Analysis Name _____

Review Lectures 25- 27

1. Find $\frac{dy}{dx}$ for the following.

a) $y = 3x^3+1$

b) $y = \frac{1}{x} + 5$

c) $y = \sqrt{6x^2+1}$

d) $y = \frac{2}{x-3}$

e) $y = \frac{2x+1}{2x-1}$

f) $y = (4x+1)^6(2x-1)^3$

g) $y = \frac{4x^2+4x+1}{2x+1}$

2. Find the equation of the line tangent to the graph of 1a at x = -1.
3. Find the equation of the line tangent to the graph of 1b at x = 1.
4. Find the equation of the line tangent to the graph of 1d at x =2.
5. Find the equation of the line tangent to the graph of 1e at x = -1.

Find the equation of the line tangent to the given function at the given point.

6. $y = 2x^2 - 3x$ at $x = 1$.
7. $y = x^2 + x + 4$ at $x = 0$.
8. 8. $y = \sqrt{4x+3}$ at $x = 11.5$.
9. $y = \frac{2}{x-3}$ at $x = 1$.
10. $y = \frac{x-1}{2x+3}$ at $x = 1$.

11. Find the derivative of the functions listed in 1a, 1dc and 8 by definition.

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Answers:

1a) $y' = 9x^2$

b) $y' = \frac{-1}{x^2}$

c) $y' = \frac{6x}{\sqrt{6x^2+1}}$

d) $y' = \frac{-2}{(x-3)^2}$

e) $y' = \frac{-4}{(2x-1)^2}$

f) $y' = 6(4x+1)^5(2x-1)^2(12x-3)$

g) $y' = 2$

2. $y = 9x + 7$
3. $y = -x + 7$
4. $y = -2x + 2$
5. $y = -\frac{4}{9}x + \frac{1}{9}$
6. $y = x - 2$
7. $y = x + 4$
8. $y = \frac{2}{7}x + \frac{26}{7}$
9. $y = -\frac{1}{2}x - \frac{1}{2}$
10. $y = \frac{1}{5}x - \frac{1}{5}$