

For each of the following problems,

- a) Compute the derivative using the limit definition.
- b) Use your answer in a) to compute an equation of the tangent line at the indicated point.

1. $f(x) = 3x + 2, x = 1$

2. $f(x) = 2x^2, x = 3$

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

4. $r(x) = 2x^2 + 4x - 1, x = 0$ (Turn in)

5. $p(x) = \frac{3}{x+1}, x = -2$

6. $p(x) = \frac{1}{1+x^2}, x = -1$

7. $g(x) = \frac{x}{x+1}, x = 4$ (Turn in)

8. $r(x) = \frac{3x+2}{4x-1}, x = 3$

9. $f(x) = \sqrt{x+3}, x = 1$ (Turn in)

10. $g(x) = \sqrt{2x-1}, x = 5$

11. $q(x) = \sqrt[3]{x}, x = 8$ (Turn in)

12. $y(x) = \frac{1}{\sqrt[3]{x^2+1}}, x = 0$

13. $c(x) = \sqrt{25-x^2}, x = 3$ (Turn in and as part c) interpret your answer to part b) geometrically as a theorem you learned in geometry.)

14. $g(x) = \frac{x}{\sqrt{x}}, x = 4$