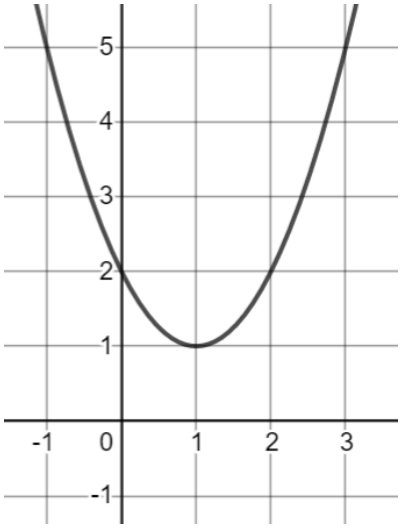
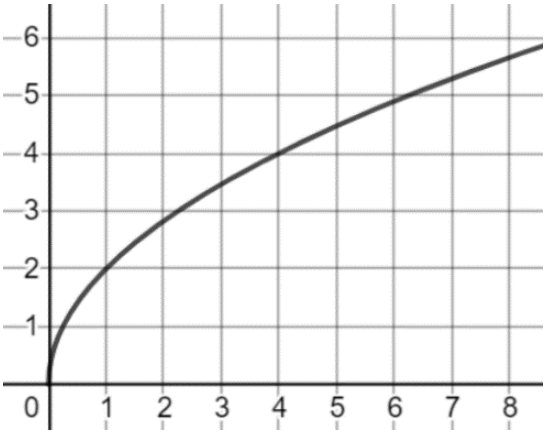
Problem Set 10: Slope of a Tangent Line

Find the equation of the tangent line at the given point, and then draw the tangent line on the graph.

1. $f(x) = x^2 - 2x + 2$ at the point $(2\,,2)$



2. $f(x) = 2\sqrt{x}$ at the point $(4\,,4)$



Find the **slope** of the tangent line at the given point.

3. $f(x) = 2x^2 + 6x + 1$ at the point $(-2\,,-3)$

4. $f(x) = \tan(\pi x)$ at $(2\,,0)$

5. $f(x) = \frac{x+1}{x-1}$ at $x = 3$

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

6. $f(x) = \frac{1}{x^2-3}$ at $(2\,,1)$

7. $f(x) = x(2x+3)^2$ at $(-1\,,-1)$

8. $f(x) = \sqrt{3x-1}+2$ at $x = \frac{2}{3}$

Find the equation of the line **normal to** the function at the given point.

9. $f(x) = -x^2 + 4x + 6$ at $(5\,,1)$

10. $f(x) = \sin\left(\frac{x}{2}\right)$ at $(0, 0)$

11. $f(x) = (x + 3)(-2x - 5)$ at $(-2\,, -1)$