Worksheet 1/31

In 1–8, find the derivative of the given function.

1. \(2x^6 + x^{-9}\)

2. \(\frac{x + 1}{x - 1}\)

3. \((x^2 + 5)^2\)

4. \(\sqrt{x} + \frac{1}{\sqrt{x}}\)

5. \((4x^2 - 1)(7x^3 + x)\)

6. \(\frac{x^2 - 1}{x^2 + 1}\)

7. \(\frac{\sqrt{x} - 2x}{\sqrt{x}}\)

8. \(\frac{2x - 3}{1 - 5x}\)

9. At which points does the cubic curve \(y = x^3 - 3x + 4\) have a horizontal tangent line?

10. At which points does the curve \(y = \frac{x + 3}{x + 2}\) have a tangent line perpendicular to \(y = x\)?

11. A line tangent to the curve \(y = \frac{1}{x + 4}\) passes through the origin. Find the point of tangency.