Week 1 Questions and Answer Key

- Day 2, questions 1-4
- Day 3, questions 5-8
- Day 4, questions 9-12

1. $y = 3x^2$ $\quad \frac{dy}{dx} = 6x$

2. $y = x^2 - 2$ $\quad \frac{dy}{dx} = 2x$

3. $y = x^2 - 3x$ $\quad \frac{dy}{dx} = 2x - 3$

4. $y = \frac{1}{x}$ $\quad \frac{dy}{dx} = \frac{-1}{x^2}$

5. $y = \frac{2}{(x-3)}$ $\quad \frac{dy}{dx} = \frac{-2}{(x-3)^2}$

6. $y = \frac{1}{(4-x^2)}$ $\quad \frac{dy}{dx} = \frac{2x}{(4-x^2)^2}$

7. $y = \sqrt{x+1}$ $\quad \frac{dy}{dx} = \frac{1}{2\sqrt{x+1}}$

8. $y = \frac{1}{\sqrt{x-1}}$ $\quad \frac{dy}{dx} = \frac{-1}{2(x-1)^{\frac{3}{2}}}$

9. $y = \frac{5}{2}x^8 - \frac{6}{5}x^5 + \frac{15}{2}x^4 - x^3 + \sqrt{2}$ $\quad \frac{dy}{dx} = 20x^7 - 6x^4 + 30x^3 - 3x^2$

10. $y = 3x^2 + 2x - 1; a = -1$ $\quad f' = -4$

11. $y = 2x^3 - 6x^2 + 2x + 9; a = -3$ $\quad f' = 92$

12. Find the equation of the Tangent Line to the curve $y = x^3 + 4x^2 - x + 2$ at (-2,12).
    $y = -5x + 2$