1. Find y for the following
   a. $\frac{dy}{dx} = 2x^3$
   b. $\frac{dy}{dx} = -4x^5$
   c. $\frac{dy}{dx} = 6$
   d. $\frac{dy}{dx} = \frac{1}{2}x^{-3}$
   e. $\frac{dy}{dx} = 2\sqrt{x}$
   f. $\frac{dy}{dx} = -5x^{3/8}$
   g. $\frac{dy}{dx} = 3x^{1/4}$

2. Find y given that $\frac{dy}{dx}$ is
   a. $3x - 2x^{-5} - x^2$
   b. $x^3 - 3x^2 + 5$
   c. $x(x - 1)(x + 3)$
   d. $(x^2 + x)(x + {}^1/_x)$
   e. $({}^6/_x)^2 + 3x^3 - 3\sqrt{x}$
   f. $(x + 3)^3 + 5x^{1/4}$
   g. $(2\sqrt{x} - x^{1/4})(x^3)$

3. Find the following integrals
   a. $\int(2x^{1/2} - x^3 + 2)dx$
   b. $\int(\frac{1}{2}x^{-3/4} + {}^1/x^2 - 3)dx$
   c. $\int(ax^3 + p^2x^{-5} + aq)dx$
   d. $\int(4t^2 + 6 + {}^1/t^2)dt$
   e. $\int(2/x^3 - 3\sqrt{x})dx$
   f. $\int x(x^2 - 2/x^3)dx$
   g. $\int[1 + (2x)^2 - (\sqrt{x} + 5)/x^2]dx$

4. Find $\int$ ydx when
   a. $y = 2x^2 - 3x + 1$
   b. $y = 2x^5 - 2x^3 + 3x - 3$
   c. $y = -3\sqrt{x}(x^2 + 2)$
   d. $y = (x^2 - 4)(2x + 3)$
   e. $y = (x^3 - 3)/\sqrt{x}$
   f. $y = (x^{1/2} + 2)^2$
   g. $y = (x^{1/2} - 3)(x^{1/4} - 1)$

5. Find the equation that passes through the given point if
   a. $dy/dx = 2x^2 - x^3$ and point (1,1)
   b. $dy/dx = x^{-1/2} - 2$ and point (4,1)
   c. $dy/dx = (x + 1)(x + 2)$ and point (2,1)

6. A curve S has a gradient of 4 and passes through the point (1,2). Find the equation of the curve S.

7. H is a curve with a gradient of $3x + 1$ and passes through the point (1,-1). Find the equation of the curve.

8. Given that $\frac{dy}{dx} = x^2 + \sqrt{x}$ and the curve passes through the point P(9,60). Find the equation.

9. If $f'(x) = (x^2 - 1)^2$, find $f(x)$. The point A(1,2) is on the equation $f(x)$.

10. Given that $dx/dt = t^2 - t$ and that x = 3 when t = 1, find the equation for x.

11. If $dV/dp = 3p^2 - \sqrt{p}$ and p =4 when V = 0,
    a. find an equation for V.
    b. find a value for V when p = 9
    c. find the gradient when p = 1