Integration by Substitution and the General Power Rule

1. Find the indefinite integral.
(Similar to p.329 #10-34)

$$\int (x-7)^{3/2}\, dx$$

2. Find the indefinite integral.
(Similar to p.329 #10-34)

$$\int (x^2-3)^5 (2x)\, dx$$

3. Find the indefinite integral.
(Similar to p.329 #10-34)

$$\int (x^4-7x+2)^8 (4x^3-7)\, dx$$

4. Find the indefinite integral.
(Similar to p.329 #10-34)

$$\int \sqrt[5]{2+3x^2}\,(6x)\, dx$$

5. Find the indefinite integral.
(Similar to p.329 #10-34)

$$\int \frac{2x-1}{(x^2-x)^3}\, dx$$

6. Find the indefinite integral.
   (Similar to p.329 #10-34)

$$\int x(7x^2 - 2)^3 \, dx$$

7. Find the indefinite integral.
   (Similar to p.329 #10-34)

$$\int \frac{x^3}{(x^4 - 3)^5} \, dx$$

8. Find the indefinite integral.
   (Similar to p.329 #10-34)

$$\int (3x^2 + 6x)^{10}(x + 1) \, dx$$

9. Find the indefinite integral.
   (Similar to p.329 #10-34)

$$\int 5x^2 \sqrt{x^3 - 4} \, dx$$

10. Find the indefinite integral.
    (Similar to p.329 #10-34)

$$\int \frac{6x - 21}{(x^2 - 7x + 1)^4} \, dx$$

11. Find the indefinite integral.
    (Similar to p.329 #35-42)

$$\int x\sqrt{x^2 - 8} \, dx$$

12. (a) Use the marginal propensity to consume, dQ/dx, to write Q as a function of x, where x is the income (in dollars) and Q is the income consumed (in dollars). Assume that families who have annual incomes of $25,000 or less consume 100% of their income (b) Use the result of part (a) and a spreadsheet to complete the table showing the income consumed and the income saved, x – Q, for various incomes
(Similar to p.329 #35-42)

X	25,000	50,000	100,000	150,000
Q				
x - Q				

$$\frac{dQ}{dx} = \frac{0.94}{(x - 24{,}999)^{0.06}} , x \geq 25000$$