1. $\int x(x-1)(x-2)dx = \int (x^3-3x^2+2x)dx$
$= \frac{1}{4}x^4 - x^3 + x^2 + c$

2. $\int (x^2+x+1)(x^2-x+1)dx = \int (x^4+x^2+1)dx$
$= \frac{1}{5}x^5 + \frac{1}{3}x^3 + x + c$

3. $\int \frac{x^4+x^2+1}{x^2-x+1}dx = \int (x^2+x+1)dx$
$= \frac{1}{3}x^3 + \frac{1}{2}x^2 + x + c$

4. $\int (\sin\theta+\cos\theta)^2 d\theta \int (\sin\theta-\cos\theta)^2 d\theta$
$= \int (\sin\theta+\cos\theta)^2 + (\sin\theta-\cos\theta)^2 d\theta$
$= \int (1+2\sin\theta\cos\theta)+(1-2\sin\theta\cos\theta)d\theta$
$= \int 2d\theta = 2\theta + c$

5. $\int t(t-2)dt = \int (t^2-2t)dt = \frac{1}{3}t^3 - t^2 + c$

6. $\int \frac{x^3+8}{x+2}dx = \int \frac{(x+2)(x^2+4-2x)}{x+2}dx$
$= \int (x^2-2x+4)dx = \frac{1}{3}x^3 - x^2 + 4x + c$

7. $\int \left(\frac{1}{\cos^2 x} - \frac{\sin^2 x}{\cos^2 x}\right)dx = \int \frac{1-\sin^2 x}{\cos^2 x}dx$
$= \int \frac{\cos^2 x}{\cos^2 x} = dx = \int 1dx = x + c$

8. $\int \frac{y^3}{y+1}dy + \int \frac{1}{y+1}dy = \int \frac{y^3+1}{y+1}dy$
$= \int \frac{(y+1)(y^2-y+1)}{y+1}dy$
$= \int (y^2-y+1)dy = \frac{1}{3}y^3 - \frac{1}{2}y^2 + y + c$

9. $\int (x-1)^3 dx - \int (x+1)^3 dx = \int (x-1)^3 - (x+1)^3 dx$
$= \int (x^3-1-3x(x-1)) - (x^3+1+3x(x+1))dx$
$= \int (x^3-1-3x^2+3x-x^3-1-3x^2-3x)dx$
$= \int (-6x^2-2)dx = -2x^3 - 2x + c$

10. $\int \frac{1}{\sec^2\theta}d\theta + \int \frac{1}{\csc^2\theta}d\theta = \int \cos^2\theta \ d\theta + \int \sin^2\theta \ d\theta$
$= \int 1 \ d\theta \ = \theta \ + c$

11. $y = f(x)$ 위의 점(x, y) 에서 기울기가 $2x$ 인 접선이 있다. 이 곡선이$(1, 0)$ 을 지나는식?
➡ $f'(x) = 2x \quad f(x) = x^2 + c$
$(1, 0) \ : \ 0 = 1 + c$
$c = -1 \quad \therefore \ f(x) = x^2 - 1$