

$$b) \quad y = x^2 + 9x - 2 \quad (2)$$

$$y = 2x^2 + 13x - 7 \quad (1)$$

$$(1) - (2)$$

$$x^2 + 4x - 5 = 0$$

$$(x-1)(x+5) = 0$$

$$\underline{x=1} \quad \underline{x=-5}$$

$$y = (1)^2 + 9 \times (1) - 2$$

$$\underline{y = 8}$$

$$y = (-5)^2 + 9 \times (-5) - 2$$

$$\underline{y = -22}$$

$$c) \quad z = x^3 - 2x^2y^3 + y^4$$

$$\frac{dz}{dx} = 3x^2 - 4xy^3$$

$$\frac{dz}{dy} = -6x^2y^2 + 4y^3$$

$$\frac{d^2z}{dx^2} = 6x - 4y^3$$

$$\frac{d^2z}{dy^2} = -12x^2y + 12y^2$$

$$\frac{d^2z}{dydx^2} = -12xy^2$$

$$\frac{d^2z}{dydx^2} = -12xy^2$$