1. Evaluate $-3x^2 - 2xy + 4y^2 - xy^3$ for ***x = 3*** and ***y = -1***.

$$= -3(\mathbf{3})^2 - 2(\mathbf{3})(\mathbf{-1}) + 4(\mathbf{-1})^2 - (\mathbf{3})(\mathbf{-1})^3$$
$$= -3(\mathbf{9}) - 2(\mathbf{-3}) + 4(\mathbf{1}) - 3(\mathbf{-1})$$
$$= -27 + 6 + 4 + 3$$
$$= -14$$

2. Simplify $\frac{100x^2y^5z^3}{-25xy^5z}$

$$= -4x^{2-1}y^{5-5}z^{3-1}$$
$$= -4x^1y^0z^2$$
$$= -4xz^2$$

3. Simplify $-2a(a + 3ab - b^2) + 6b(2a - ab + b)$

$$= -2a^2 - 6a^2b + 2ab^2 + 12ab - 6ab^2 + 6b^2$$
$$= -2a^2 - 6a^2b - 4ab^2 + 12ab + 6b^2$$