

Simplify the following expressions.

1. a) $(3x^2 - 2xy^2 + 3xy) + (2x^2 + 3xy^2 - 5xy)$

$$5x^2 + xy^2 - 2xy$$

b) $(4x^2 - 8x + 1) - (2x^2 - 3x + 5)$

$$2x^2 - 5x - 4$$

c) $3x^2(4x - 1)$

$$12x^3 - 3x^2$$

d) $\frac{8x^4 - 10x^3 + 4x^2}{2x^2}$

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

e) $(x - 5)(3x + 2)$

$$3x^2 - 13x - 10$$

f) $(2x^2 - 3xy^4)(5x^2 - 6xy^4)$

$$10x^4 - 27x^3y^4 + 18x^2y^8$$

g) $(x + 9)(x - 9)$

$$x^2 - 81$$

h) $(2x + 3)^2$

$$4x^2 + 12x + 9$$

i) $(3x + 4)(2x + 6)(x - 5)$

$$6x^3 - 4x^2 - 106x - 120$$

j) $(4x - 5)^3$

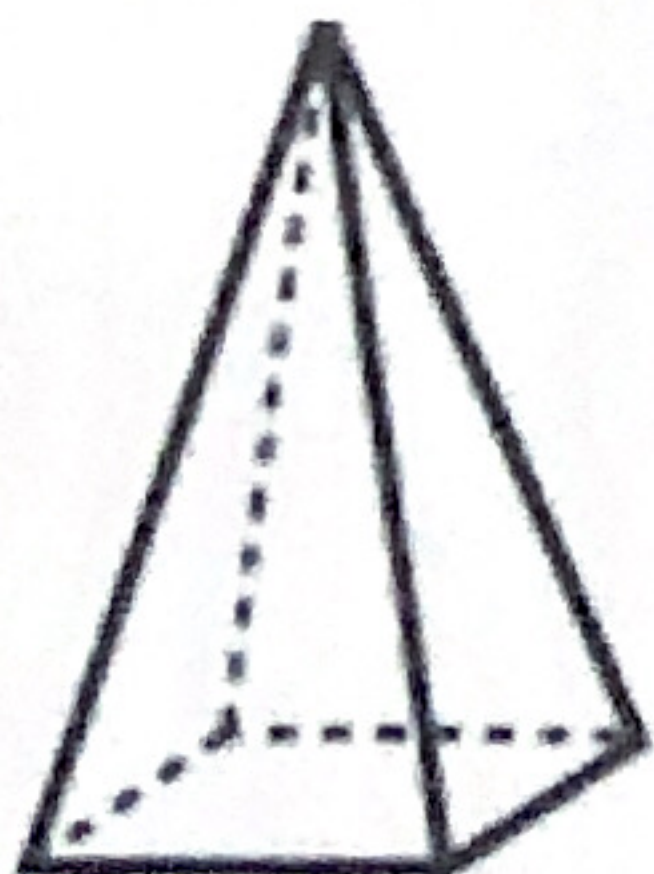
$$64x^3 - 240x^2 + 300x - 125$$

k) $(x + 3)^2 - (x + 1)^2$

$$4x + 8$$

2. Express, as a polynomial, the volume of a square-based pyramid with a base length of $(3x - 2)$, and a height of $(6x + 1)$. ***Note:

$$V_{\text{pyramid}} = \frac{A_b \cdot h}{3}$$



$$\left(18x^3 - 21x^2 + 4x + \frac{4}{3}\right) \text{ units}^3$$