

1. Simplify each of the following expressions.

a) $3(2x - 5) - 4x - 3$

e) $(3\sqrt{5} - 2)^2$

i) $(3\sqrt{6} - 5)(3\sqrt{6} + 5)$

b) $3(2x - 5) - 4(x - 3)$

f) $\sqrt{48} - 2\sqrt{27} + 5\sqrt{12}$

j) $(3q - 2)^2 - 2(q - 1)^2$

c) $(5m^3 - 2)(5m^3 + 2)$

g) $(2a - 7)(3a + 1)$

k) $2x - 5 - (x - 1)^2$

d) $(3x - 2y)^2$

h) $(2\sqrt{3} - 7)(3\sqrt{3} + 1)$

2. Consider the expressions $(2m - 1)^2$ and $(1 - 2m)^2$.

a) Simplify both expressions.

b) What do you notice? Can you explain it?

3. Factor out the GCF (greatest common factor) of each of the following.

a) $28x^3 - 20x^2 + 4x^5$

b) $6ab + 12a^4b - 30ab^2c$

4. Completely factor each of the following.

a) $-16a^2 + 9b^2$

b) $2x^5 - 2x^3$

c) $810 - 10p^4$

5. Solve each of the following equations. Make sure to check your solution(s).

a) $2(x - 5) - 3(x + 2) = 5(x + 3) - 7$

e) $5x^3 = 20x^2$

b) $2x - 3 = 5x + 1$

f) $5x^3 = 20x$

c) $(3x - 1)^2 - (x - 2)^2 = 2(2x - 1)^2 + 1$

g) $2x(2x + 7)(x - 3) = 0$

d) $\frac{2}{3}x + \frac{2}{5} = \frac{3}{20}$