Adding and Subtracting Polynomials

Name_____

Date_____ Period____

Simplify each expression.

1) $(x^2 - x) + (8x - 2x^2)$

$$= -x^2 + 7x$$

2) $(6a - 3a^2) + (2a^2 - 3a)$

$$-a^2 + 3a$$

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

$$9x - 3$$

4) $(2a^2 + 4a) - (3a + 8)$

$$2a^2 + 4a - 3a - 8$$
$$2a^2 + a - 8$$

5) $(10p + 11) - (11p + 13 + 16p^2)$

$$10p + 11 - 11p - 13 - 16p^2$$
$$-16p^2 - p - 2$$

6) $(8n^2 - 2n) + (6n - 8n^2)$

$$4n$$

7) $(8b + 8) - (6 - 7b)$

$$8b + 8 - 6 + 7b$$
$$15b + 2$$

8) $(7r^2) + (r - 3) + (6r - 3r) + (10) + (2 + r^2)$

$$5r^2 + 7r + 9$$

9) $(10x - 2) + (12 + x) - (x - x^2)$

$$10x - 2 + 12 + x - x + x^2$$
$$x^2 + 10x + 10$$

10) $(9a + 1 - 11a^2) - (a + 8a^2 + 2) - (6a^2 - 9)$

$$9a + 1 - 11a^2 - a - 8a^2 - 2 - 6a^2 + 9$$
$$-25a^2 + 8a + 8$$

11) $(-3m^2 + m) + (4m^2 + 6m)$

$$m^2 + 7m$$

12) $(2x^2 + 1) + (x^2 - 2x + 1)$

$$3x^2 - 2x + 2$$

13) $(3x^3 - x) + 5x^3 + (-4x^3 + x^2 - 8)$

$$x^3 + 4x^2 - x - 8$$

14) $(5x^2 - 2x - 1) - (3x^2 - 5x + 7)$

$$5x^2 - 2x - 1 - 3x^2 + 5x - 7$$
$$2x^2 + 3x - 8$$

15) Subtract $t - 3t^2 + 7$ from $5t - 9$

$$(5t - 9) - (t - 3t^2 + 7)$$
$$5t - 9 - t + 3t^2 - 7$$
$$3t^2 + 4t - 16$$

16) Subtract $y^2 - y$ from $y^2 + 3y$

$$(y^2 + 3y) - (y^2 - y)$$
$$y^2 + 3y - y^2 + y$$
$$4y$$

Adding and Subtracting Radical Expressions   Date_____ Period_____

Simplify.

1) $-3\sqrt{24} - 3\sqrt{2} + 2\sqrt{2}$

$-3\sqrt{(2\cdot2)\cdot2\cdot3} - 3\sqrt{2} + 2\sqrt{2}$

$\boxed{-6\sqrt{6} - \sqrt{2}}$

2) $-3\sqrt{45} - \sqrt{5} + 2\sqrt{2}$

$-3\sqrt{(3\cdot3)\cdot5} - \sqrt{5} + 2\sqrt{2}$

$-9\sqrt{5} - \sqrt{5} + 2\sqrt{2}$

$\boxed{-10\sqrt{5} + 2\sqrt{2}}$

3) $-\sqrt{18} - \sqrt{6} + 2\sqrt{2}$

$-\sqrt{2\cdot(3\cdot3)} - \sqrt{6} + 2\sqrt{2}$

$-3\sqrt{2} - \sqrt{6} + 2\sqrt{2}$

$\boxed{-\sqrt{2} - \sqrt{6}}$

4) $-3\sqrt{12} - 2\sqrt{27} - 2\sqrt{45}$

$-3\sqrt{(2\cdot2)\cdot3} - 2\sqrt{(3\cdot3)\cdot3} - 2\sqrt{(3\cdot3)\cdot5}$

$-6\sqrt{3} - 6\sqrt{3} - 6\sqrt{5}$

$\boxed{-12\sqrt{3} - 6\sqrt{5}}$

5) $3\sqrt{8} + 2\sqrt{27} + 3\sqrt{3}$

$3\sqrt{(2\cdot2)\cdot2} + 2\sqrt{(3\cdot3)\cdot3} + 3\sqrt{3}$

$6\sqrt{2} + 6\sqrt{3} + 3\sqrt{3}$

$\boxed{6\sqrt{2} + 9\sqrt{3}}$

6) $2\sqrt{12} + 3\sqrt{45} + 3\sqrt{3}$

$2\sqrt{(2\cdot2)\cdot3} + 3\sqrt{(3\cdot3)\cdot5} + 3\sqrt{3}$

$4\sqrt{3} + 9\sqrt{5} + 3\sqrt{3}$

$\boxed{7\sqrt{3} + 9\sqrt{5}}$

7) $3\sqrt{54} - 3\sqrt{45} + 3\sqrt{45}$

$3\sqrt{(3\cdot3)\cdot3\cdot2} - 3\sqrt{(3\cdot3)\cdot5} + 3\sqrt{(3\cdot3)\cdot5}$

$9\sqrt{6} - 9\sqrt{5} + 9\sqrt{5}$

$\boxed{9\sqrt{6}}$

8) $\sqrt{72} + 4\sqrt{128} - \sqrt{96} + 4\sqrt{8}$

$\sqrt{(2\cdot2)\cdot2\cdot(3\cdot3)} + 4\sqrt{(2\cdot2)(2\cdot2)(2\cdot2)\cdot2} - \sqrt{(2\cdot2)(2\cdot2)\cdot2\cdot3} + 4\sqrt{(2\cdot2)\cdot2}$

$6\sqrt{2} + 32\sqrt{2} - 4\sqrt{6} + 8\sqrt{2}$

$\boxed{46\sqrt{2} - 4\sqrt{6}}$

9) $-2\sqrt{3} + 3\sqrt{27}$

$-2\sqrt{3} + 3\sqrt{(3\cdot3)\cdot3}$

$-2\sqrt{3} + 9\sqrt{3}$

$\boxed{7\sqrt{3}}$

10) $-3\sqrt{45} - \sqrt{5} + 2\sqrt{2}$

$-3\sqrt{(3\cdot3)\cdot5} - \sqrt{5} + 2\sqrt{2}$

$-9\sqrt{5} - \sqrt{5} + 2\sqrt{2}$

$\boxed{-10\sqrt{5} + 2\sqrt{2}}$

11) $-\sqrt{18} - \sqrt{6} + 2\sqrt{2}$

$-\sqrt{2\cdot(3\cdot3)} - \sqrt{6} + 2\sqrt{2}$

$-3\sqrt{2} - \sqrt{6} + 2\sqrt{2}$

$\boxed{-\sqrt{2} - \sqrt{6}}$

12) $2\sqrt{6} + 3\sqrt{54}$

$2\sqrt{6} + 3\sqrt{2\cdot3\cdot(3\cdot3)}$

$2\sqrt{6} + 9\sqrt{6}$

$\boxed{11\sqrt{6}}$

13) $-\sqrt{5} + 3\sqrt{5} + 2\sqrt{45}$

$-\sqrt{5} + 3\sqrt{5} + 2\sqrt{(3\cdot3)\cdot5}$

$-\sqrt{5} + 3\sqrt{5} + 6\sqrt{5}$

$\boxed{8\sqrt{5}}$

14) $3\sqrt{8} + 2\sqrt{27} + 3\sqrt{3}$

$3\sqrt{(2\cdot2)\cdot2} + 2\sqrt{(3\cdot3)\cdot3} + 3\sqrt{3}$

$6\sqrt{2} + 6\sqrt{3} + 3\sqrt{3}$

$\boxed{6\sqrt{2} + 9\sqrt{3}}$