1．次の方程式を解きなさい。

(1) $x^2 - 36 = 0$
$x^2 = 36$
$x = \pm\sqrt{36} = \pm\sqrt{6^2}$
$\quad = \pm 6$

(2) $\dfrac{1}{7}x^2 - 7 = 0$
$7 \times \left(\dfrac{1}{7}x^2 - 7\right) = 7 \times 0$
$x^2 - 49 = 0$
$x^2 = 49$
$x = \pm\sqrt{49} = \pm\sqrt{7^2} = \pm 7$

(3) $2x^2 - 128 = 0$
$\dfrac{1}{2} \times (2x^2 - 128) = \dfrac{1}{2} \times 0$
$x^2 - 64 = 0$
$x^2 = 64$
$x = \pm\sqrt{64} = \pm\sqrt{8^2}$
$\quad = \pm 8$

(4) $4x^2 - 9 = 0$
$\dfrac{1}{4}(4x^2 - 9) = \dfrac{1}{4} \times 0$
$x^2 - \dfrac{9}{4} = 0 \implies x^2 = \dfrac{9}{4}$
$x = \pm\sqrt{\dfrac{9}{4}} = \pm\sqrt{\dfrac{3^2}{2^2}} = \pm\dfrac{3}{2}$

(5) $x^2 - 75 = 0$
$x^2 = 75$
$x = \pm\sqrt{75} = \pm\sqrt{5^2 \times 3}$
$\quad = \pm 5\sqrt{3}$

(6) $\dfrac{1}{2}x^2 - 8 = 0$
$2 \times \left(\dfrac{1}{2}x^2 - 8\right) = 2 \times 0$
$x^2 - 16 = 0$
$x^2 = 16$
$x = \pm\sqrt{16} = \pm\sqrt{4^2} = \pm 4$

(1) $x = \pm 6$	(2) $x = \pm 7$	(3) $x = \pm 8$
(4) $x = \pm\dfrac{3}{2}$	(5) $\pm 5\sqrt{3}$	(6) $x = \pm 4$

2．次の方程式を解きなさい。

(1) $(x - 7)^2 = 81$
$(x - 7) = \pm\sqrt{81} = \pm\sqrt{9^2}$
$\quad\quad = \pm 9$
$x = 7 \pm 9$

(2) $(x + 5)^2 = 121$
$(x + 5) = \pm\sqrt{121} = \pm\sqrt{11^2}$
$\quad\quad = \pm 11$
$x = -5 \pm 11$

(3) $\left(x - \dfrac{3}{2}\right)^2 = \dfrac{49}{4}$
$x - \dfrac{3}{2} = \pm\sqrt{\dfrac{49}{4}} = \pm\dfrac{\sqrt{7^2}}{\sqrt{2^2}} = \pm\dfrac{7}{2}$
$x = \dfrac{3}{2} \pm \dfrac{7}{2}$

(4) $\left(x - \dfrac{1}{2}\right)^2 = \dfrac{25}{4}$
$x - \dfrac{1}{2} = \pm\sqrt{\dfrac{25}{4}} = \pm\dfrac{\sqrt{5^2}}{\sqrt{2^2}} = \pm\dfrac{5}{2}$
$x = \dfrac{1}{2} \pm \dfrac{5}{2}$

(5) $\left(x + \sqrt{2}\right)^2 - 4 = 0$
$\left(x + \sqrt{2}\right) = 4$
$x + \sqrt{2} = \pm\sqrt{4} = \pm\sqrt{2^2} = \pm 2$
$x = \pm 2 - \sqrt{2}$

(6) $(x - 1)^2 = \dfrac{1}{4}$
$(x - 1) = \pm\sqrt{\dfrac{1}{4}} = \pm\dfrac{\sqrt{1^2}}{\sqrt{2^2}} = \pm\dfrac{1}{2}$
$x = 1 \pm \dfrac{1}{2}$

(1) $x = -2, \ x = 16$	(2) $x = -16, \ x = 6$	(3) $x = -2, \ 5$
(4) $x = -2, \ x = 3$	(5) $x = \pm 2 - \sqrt{2}$	(6) $x = \dfrac{1}{2}, \ x = \dfrac{3}{2}$