4.6 Solve using square roots.

Solve.

① $x^2 - 4 = 0$

$(x-2)(x+2) = 0$

$x = 2, -2$

$x^2 - 4 = 0$

$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

$x = 2, -2$

$$x^2 - 4 = 0$$

$$x = \frac{-0 \pm \sqrt{0^2 - 4(1)(-4)}}{2(1)}$$

$$x = \frac{0 \pm \sqrt{16}}{2}$$

$$x = \frac{\pm 4}{2} = \pm 2$$

② $x^2 - 3x = 5$

If $b \neq 0$, can't use square roots

(3) $3x^2 - 75 = 0$

$3(x^2 - 25) = 0$

$3(x-5)(x+5) = 0$

$\frac{3x^2}{3} = \frac{75}{3}$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

$x = 5, -5$

④ $\frac{4x^2}{4} = \frac{80}{4}$

$\sqrt{x^2} = \sqrt{20}$

$x = \pm\sqrt{20}$

$x = \pm\sqrt{4 \cdot 5}$

$x = \pm 2\sqrt{5}$

20
2 10
2 5

$\pm 2\sqrt{5}$

i = the imaginary number

$i = \sqrt{-1}$

⑤ $\sqrt{-25} = \sqrt{25(-1)}$

$= 5i$

i = the imaginary number

$i = \sqrt{-1}$

$x = \pm\sqrt{16(-1)}$

(5) $x^2 + 16 = 0$

$\sqrt{x^2} = \sqrt{-16}$

$x = \pm\sqrt{16} \cdot \sqrt{-1}$

$x = \pm 4i$

⑥ $\sqrt{-48}$

$\sqrt{16 \cdot 3(-1)}$

$4i\sqrt{3}$

$4\sqrt{3}i$

(6) $\sqrt{-48}$

$\sqrt{48} \cdot \sqrt{-1}$

$\sqrt{16 \cdot 3}\ i$

$4\sqrt{3}\ i$